A REVISION OF THE FLIES OF THE GENUS *Lespesia* (= *Achaetoneura*) IN NORTH AMERICA (DIPTERA: TACHINIDAE)

by

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ABSTRACT

The tachinid fly genus Lespesia has been revised for North America. Twenty-one species have been included of which five, Lespesia callosamiae, L. fasciagaster, L. flavifrons, L. parva, and L. sabroskyi, are described as new. Four specific names have been reduced to synonymy. Separate keys for males and for females have been provided. Thirty-four figures have been included. The well known generic name Achaetoneura has been replaced by the older name, Lespesia.

INTRODUCTION

Lespesia is a genus of economically important parasitic flies, the species of which have been frequently reared from Lepidopterous larvae. The genus has not been restudied since the revision by Webber (1930). An attempt to identify specimens by means of his revision frequently reveals that it is inadequate. Many specimens will not key out properly, and determination is often impossible unless the specimen is accompanied by a host record or a puparium. It is therefore the purpose of this revision to provide keys, descriptions and illustrations that will make positive identification feasible in most cases.

Lespesia is an extremely homogeneous genus with respect to visible species characters, and what characters there are cannot always be relied upon. Perhaps the most

reliable characters are found in the shapes of the cerci and surstyli of the male terminalia and the shapes of the sclerites of the female postabdomen (see figs. 7-31). The ratio of the frontal width at vertex to the head width (figs. 1 and 2) is often useful. Other characters of value include the color of the abdomen, the number of lateral scutellar bristles, the length of the pulvilli of the front tarsi in relation to the last two tarsal segments, the number of antero-dorsal bristles on the middle tibiae, and over-all body size. The host, if known, is also an important clue to identification. The puparia offer some differences among a few species.

It is difficult to state the relationship of Lespesia to the rest of the Tachinidae because it falls in the enormous central mass of the family where genera, tribes and subfamilies are exceedingly difficult to define. Perhaps two of the closest genera are Eufrontina Brooks and Frontiniella Townsend, both of which have three sternopleural bristles as opposed to four in Lespesia, differently shaped male terminalia, and a different type of puparium with the stigmal plates protruding to form tubercles. The stigmal plates in the puparium of Lespesia are flush with the surface of the puparium. According to Mesnil (personal communication, 1959) Lespesia Robineau-Desvoidy, Descampsia Mesnil, Pseudoperichaeta Brauer and Bergenstamm, Sturmiopsis Townsend and Phryxe Robineau-Desvoidy constitute a natural group with many morphological and biological characters in common, which may be classified as subfamily

Goniinae, tribe Phryxini. Perhaps Frontiniella and Eufrontina belong in this group but little seems to be known of their biology, so that this is tentative. Some Sturmiini (e.g. the Sturmia inquinita-distincta complex) have many morphological characters in common with Lespesia. However, these species differ biologically in that they deposit microtype eggs on the food plant of the host, whereas Lespesia deposits membranous eggs on the body of the host. Townsend (1941, pt. XI) places Lespesia in the family Exoristidae, tribe Phrynoini but Townsend's families and tribes are of doubtful validity due to his extreme tendency towards splitting. It will not be possible to give a final answer on the relationships of this genus until the central mass of the Tachinidae has been thoroughly studied on a world-wide basis.

MATERIALS AND METHODS

This study was based upon 4,266 specimens, which were distributed as indicated among the following species: aletiae, 416; anisotae, 156; archippivora, 768; callosamiae, 55; ciliata, 855; cuculliae, 21; dimmocki, 7; euchaetiae, 287; fasciagaster, 6; ferruginea, 2; frenchii, 828; laniiferae, 2; melalophae, 359; parva, 2; pholi, 26; rileyi, 52; sabroskyi, 204; schizurae, 152; testacea, 21; and texana, 2.

The specimens were examined under magnifications of ten to forty-five diameters. Drawings were made on squared paper with the aid of an ocular grid. Measurements were

taken with an ocular micrometer, at 30 diameters. The head width was measured as seen from the front (fig. 1). The frontal width at the vertex was measured as seen from above (fig. 2). The means of these measurements with their standard deviations are given in Tables I and II, pp. 91 and 92.

Identification is often possible by means of external characters alone, but it is often necessary to examine the male terminalia or the female postabdomen. These structures must be dissected from the specimen to be seen clearly. A number of techniques were tried for dissecting, examining and storing the terminalia of which the following was the most satisfactory. The abdomen was carefully broken off the specimen, placed in a 10% aqueous solution of KOH (caustic potash) and heated to just below the boiling point for about ten minutes or until it was sufficiently relaxed. It was then transferred to slightly acidified 70% alcohol and the terminalia were extracted with fine jeweler's forceps. The abdomen was run through a graded series of alcohols (70%, 95% and 100%) to dry it and was glued back on the specimen. If this is done carefully, the appearance of the specimen is unimpaired. The terminalia were examined by imbedding them in a smear of petroleum jelly on a hanging drop slide and covering them with a few drops of slightly acidified glycerin. The terminalia were stored in microvials which were attached to the pins by running the pin through the cork. Thus the terminalia can be kept with the specimen they come from and there is

little chance of their becoming lost. It is important to acidify the glycerin in which the terminalia are stored, otherwise the clearing process will continue and they will disappear.

The terminology employed in this revision is in general that which is in common usage by students of Diptera. Most of the terms used can be found in Comstock's Introduction to Entomology and/or Townsend's Manual of Myiology. The terminology of the male and female external reproductive organs has been taken from Crampton (1942). Due to the fusion of the first two abdominal tergites in the cyclorrhaphous Diptera, I have begun with tergite two rather than tergite one when counting the abdominal terga from dorsal view.

An attempt has been made to check all synonymies given by Webber by reference to the type specimens. Except where otherwise stated, all species which have been placed in synonymy have been so placed only after reference to the types.

Except where otherwise stated, all locality, host and flight records are based upon specimens that I have examined personally. After each host, the number of flies that have been reared from it is recorded in parenthesis. With a few exceptions, the names of Lepidoptera have been taken from McDunnough (1938-39). For the Saturniidae, I have followed Michener (1952).

Throughout this paper reference is occasionally made to code numbers used to label specimens by the Gypsy

Moth Laboratory at Melrose Highlands, Massachusetts (e.g., Gip. Moth Lab. 11776K1). These may be ignored because they represent merely the locality and host of a specimen. Locality and host are given in all such cases and the code numbers are included here only for the sake of completeness.

SYSTEMATIC TREATMENT

Genus Lespesia Robineau-Desvoidy

Lespesia Robineau-Desvoidy, 1863, p. 567.

Type: Erycia ciliata Macquart, monobasic.

Achaetoneura Brauer and Bergenstamm, 1891, p. 334.

Type: Achaetoneura hesperus Brauer and Bergenstamm, designated by Coquillett, 1910, p. 502.

Parafrontina Brauer and Bergenstamm, 1893, p. 115.

Type: Parafrontina apicalis Brauer and Bergenstamm.

Rileyella Townsend, 1909, p. 249.

Type: Tachina aletiae Riley, by original designation.

Zygofrontina Townsend, 1915, p. 427.

Type: Zygofrontina capitis Townsend, by original designation.

Euparafrontina Brèthes, 1917, p. 17.

Type: Euparafrontina martinezi Brèthes, monobasic.

Ypophaemyia Townsend, 1916c, p. 75.

Type: Ypophaemyia malacosomae Townsend, by original designation.

Masiceropsis Townsend, 1916a, p. 178.

Type: Masicera pauciseta Coquillett, by original designation.

Achaetoneuropsis Townsend, 1927, p. 272.

Type: Achaetoneuropsis affinis Townsend, by original designation.

I have examined the type specimens of type species of all of the above genera except Erycia ciliata Macq. and Euparafrontina martinezi Brèthes. The latter was synonymized with Achaetoneura by Aldrich (1934).

It is with regret and hesitation that I suppress the well established name Achaetoneura in favor of Lespesia. However, this change is unavoidable if the law of priority is to be adhered to, as Lespesia is the older name. It was adequately described by Robineau-Desvoidy (1863), and the type is well preserved in the Museum National d'Histoire Naturelle, Paris. Mesnil (1950, pp. 105 and 108) was the first to rediscover the name Lespesia, and he used that name instead of Achaetoneura in Lindner's Die Fliegen der Palaearktischen Region. At my request, Dr. George W. Byers compared specimens of Achaetoneura with the type of Lespesia ciliata (Macquart), as a result of which there remains little doubt that this type agrees with what has previously been known as Achaetoneura.

The use of the name Achaetoneura in North America dates to Allen (1926), who pointed out that the type species of Frontina, the name previously used for this genus, is Frontina laeta Meigen, a European species, which has characters foreign to Lespesia, i.e., a different mode of reproduction, strong discal bristles on abdominal terga two and three, the hind tibiae irregularly bristled,

the third antennal segment peculiarly slender, etc. Achaetoneura was adopted by Allen (1926) and Webber (1930) and has been used up to the present time.

GENERIC DIAGNOSIS

Eyes bare, at most with slight pubescence. Ocellar bristles strong, proclinate. Antennae reaching lowest fourth of face; third segment broad, rounded at apex, never tapering to a point; second segment less than one-third the length of the third; arista bare; second segment of arista about twice as long as wide. Frontal bristles extending below base of third antennal segment. Male with two pairs of reclinate fronto-orbital bristles which are nearly in line with the bristles of the frontal row, without proclinate fronto-orbitals; female with two pairs of reclinate fronto-orbital bristles as in the male and in addition two pairs of proclinate fronto-orbitals, which lie well outside the frontal row. Ratio of frontal width at vertex to head width always greater in females than in males (see Tables I and II). Parafacials bare; face slightly receding. Facial ridges bristled one-third to two-thirds of the distance from vibrissae to antennal bases. Vibrissae located at level of oral margin; cheeks covered with hair; palpi yellow, well developed; proboscis when fully extended equal in length to about two-thirds of head height.

Thorax gray-pollinose with well developed bristles; mesonotum with four black vittae visible from postero-dorsal view. Chaetotaxy as follows: acrostichals 3:3;

dorsocentrals 3:4; intraalars 3:3; intrapostalars 1; supraalars 2:3; humerals 4; notopleurals 2; sternopleurals 4; lateral scutellars 3-4; discal scutellars 1; apical scutellars 1. Apical scutellars usually erect and cruciate. Propleuron bare. Prosternum with weak hairs. Legs black; middle tibiae with one or more strong antero-dorsal bristles near middle; hind tibiae with a row of ciliae on the postero-dorsal surface, with or without a longer bristle near middle. Wings (fig. 32) hyaline, with normal muscoid venation; cell R_5 open, ending considerably before apex of wing; last section of vein $M_3 + Cu_1$ less than half as long as preceding section; veins bare except base of vein R_{4+5} which has two or three short bristles.

Abdomen without discal bristles on terga 2 to 4; with or without median marginal bristles on terga 2 and 3; if median marginals are present there is never more than one pair on each segment; fourth tergum with a marginal row of bristles; fifth tergum more or less irregularly bristled on entire surface.

Puparium smooth, without spine-like hairs; stigmal plates flat, not protruding to form tubercles; spiracular plates serpentine.

Reproduction by deposition of membranous eggs, ready to hatch, on the body of the host.

Key to the Males of the North American Species of Lespesia

1. Abdomen black in ground color, predominantly gray-pollinose, without bare red areas except for small red spots laterally on tergum 3 4

- Abdomen red in ground color, with bare reddish areas covering most of abdomen but always with a black stripe down mid-line of dorsum. 2

2. Median marginal bristles absent on abdominal tergum 3 . . . . . rileyi

- Median marginal bristles present on abdominal tergum 3 3

3. Three lateral scutellar bristles . . . . . ferruginea

- Four lateral scutellar bristles. . . . . testacea

4. Three lateral scutellar bristles 5

- Four lateral scutellar bristles. 11

5. With a minimum of two strong antero-dorsal bristles near middle of middle tibiae which are equal or sub-equal in size . . . . . dimmocki

- With only one strong antero-dorsal bristle on middle tibiae; if other bristles are present they are usually only one-half size of strongest bristle . . 6

6. Pulvilli of front tarsi no longer than last tarsal segment 7

- Pulvilli of front tarsi as long as or longer than last tarsal segment 8

7. Body length 5 mm., abdomen with shining black bands on posterior margins of terga 3 to 5. . . . . .parva

- Body length 5 to 8 mm., abdomen uniformly gray-pollinose without shining black bands on posterior margins of terga 3 to 5 . . . . . archippivora

8. Frontal width at vertex less than .775 mm. . melalophae

- Frontal width at vertex greater than .775 mm.. . . . 9

9. Frontal width at vertex less than .875 mm.. . frenchii

\- Frontal width at vertex greater than .875 mm. . . . 10

10. Terminalia with cerci and surstyli long and slender, cerci without a concavity on posterior edge (fig. 11). (Posterior spiracles of puparium sunken into pits, located on or near the horizontal axis.) . . . . . .ciliata

\- Terminalia with cerci and surstyli short and broad, cerci with a concavity on posterior edge (fig. 12). /Posterior spiracles of puparium not in pits, located above the horizontal axis (fig. 34A)./ . . . . . euchaetiae

11. Median marginal bristles present on abdominal terga 2 and 3. 16

\- Median marginal bristles absent on abdominal terga 2 and/or 3 12

12. Median marginal bristles absent on abdominal terga 2 and 3. . . . . .aletiae

\- Median marginal bristles present only on abdominal tergum 3 13

13. Thoracic pollen with a yellowish cast visible to the naked eye; cerci with a concavity on posterior surface (fig. 15) . . . . . .pholi

\- Thoracic pollen gray, without a yellowish cast; cerci without a concavity on posterior surface 14

14. Hind tibiae ciliate with a longer bristle near middle; third antennal segment less than 3.0 times length of second . . . . . .cuculliae

- Hind tibiae ciliate, usually without a longer bristle; third antennal segment more than 3.0 times length of second 15

15. Abdomen with a yellowish cast; Mexico . . . laniiferae

- Abdomen without a yellowish cast; North America . . . . . .schizurae

16. Abdomen gray-pollinose, marked by bare shining black bands on posterior margins of terga 3 to 5 . . . . . fasciagaster

- Abdomen uniformly gray-pollinose, without bare shining black bands on posterior margins of terga 3 to 5 . 17

17. Face and front bright yellow-pollinose. 18

- Face and front gray-pollinose, at most only slightly tinged with yellow 19

18. Facial depression yellow-pollinose. . . . . texana

- Facial depression gray-pollinose. . . . . flavifrons

19. Wings with distance from crossvein r-m to tip of vein R_{4+5} 3.39 mm. or more; body length usually 10 mm. or more 20

- Wings with distance from crossvein r-m to tip of vein R_{4+5} 3.24 mm. or less; body length usually 9 mm. or less. 22

20. Cerci and surstyli long, slender and attenuated (fig. 8) . . . . . anisotae

- Cerci and surstyli broad (figs. 10 and 18). 21

21. Surstyli with a distinct convexity on their posterior edge (fig. 10) . . . . . .callosamiae

- Surstyli without a distinct convexity on their posterior edge (fig. 18) . . . . . .sabroskyi

22. Frontal width at vertex less than .875 mm.. . frenchii

- Frontal width at vertex greater than .875 mm. . . . 23

23. Eyes with distinct pubescence visible at high magnification; two to three strong antero-dorsal bristles on middle tibiae . . . . . dimmocki

- Eyes at most with only slight pubescence visible at high magnification; one strong antero-dorsal bristle on middle tibiae 24

24. Terminalia with cerci and surstyli long and slender, cerci without a concavity on posterior edge (fig. 11). (Posterior spiracles of puparium sunken into pits, located on or near the horizontal axis.) . . . . . .ciliata

- Terminalia with cerci and surstyli short and broad; cerci with a concavity on posterior edge (fig. 12). /Posterior spiracles of puparium not in pits, located above the horizontal axis (fig. 34A)./ . . . . . euchaetiae

Key to the Females of the North American Species of Lespesia

1. Abdomen black in ground color, predominantly gray-pollinose, without bare red areas except for small red spots laterally on tergum 3. 4

- Abdomen red in ground color, with bare reddish areas covering most of abdomen but always with a black stripe down midline of dorsum. 2

2. Median marginal bristles absent on abdominal tergum 3; hind tibiae ciliate, usually without a longer bristle near middle . . . . . rileyi

- Median marginal bristles present on abdominal tergum 3; hind tibiae ciliate with a longer bristle near middle. 3

3. Three lateral scutellar bristles . . . . . ferruginea

- Four lateral scutellar bristles. . . . . testacea

4. Three lateral scutellar bristles 5

- Four lateral scutellar bristles. 11

5. With a minimum of two strong antero-dorsal bristles near middle of middle tibiae which are equal or sub-equal in size . . . . . dimmocki

- With only one strong antero-dorsal bristle on middle tibiae; if other bristles are present they are at most one-half the size of the strongest bristle . . 6

6. Abdomen with bare and shining black bands on posterior margins of terga 3 to 5; body length 5 mm.. . . .parva

- Abdomen uniformly gray-pollinose without shining black bands on posterior margins of terga 3 to 5; body length usually greater than 5 mm. 7

7. Frontal width at vertex less than .85 mm.; face and front with a pronounced yellowish cast. . . melalophae

- Frontal width at vertex greater than .85 mm.; face and front with at most a slight yellowish cast. . . 8

8. Ratio of frontal width at vertex to head width .408 ± .0112 . . . . . archippivora

- Ratio of frontal width at vertex to head width .380 ± .0137 or less. 9

9. Ratio of frontal width at vertex to head width .366 ± .0124; host usually Euchaetias egle. . . . euchaetiae

- Ratio of frontal width at vertex to head width greater than above; host not Euchaetias egle 10

10. Ratio of frontal width at vertex to head width .376 ± .0149; posterior spiracles of puparium sunken into pits; host Hyalophora spp. . . . . .ciliata

- Ratio of frontal width at vertex to head width .380 ± .0137; posterior spiracles of puparium flush with surface of puparium; host not Hyalophora spp.. . . . . frenchii

11. Median marginal bristles present on abdominal terga 2 and 3. 16

- Median marginal bristles absent on abdominal terga 2 and/or 3 12

12. Median marginal bristles absent on abdominal terga 2 and 3. . . . . .aletiae

- Median marginal bristles present only on abdominal tergum 3 13

13. Thoracic pollen with a yellowish cast visible to the naked eye. . . . . .pholi

- Thoracic pollen gray, at most with only a slight yellowish cast 14

14. Hind tibiae ciliate with a longer bristle near middle; third antennal segment less than 3.0 times length of second . . . . . .cuculliae

- Hind tibiae ciliate, usually without a longer bristle; third antennal segment more than 3.0 times length of second. 15

15. Abdomen with a yellowish cast; Mexico . . . laniiferae

- Abdomen without a yellowish cast; North America . . . . . .schizurae

16. Abdomen gray-pollinose, marked by bare shining black bands on posterior margins of terga 3 to 5 . . . . . fasciagaster

- Abdomen uniformly gray-pollinose, without bare shining black bands on posterior margins of terga 3 to 5 17

17. Face and front bright yellow-pollinose. 18

- Face and front gray-pollinose, at most only slightly tinged with yellow 19

18. Facial depression yellow-pollinose. . . . . texana

- Facial depression gray-pollinose. . . . . flavifrons

19. Wings with distance from crossvein r-m to tip of vein R_{4+5} 3.39 $\pm$ .436 mm.; body length usually 10 mm. or more 20

- Wings with distance from crossvein r-m to tip of vein R_{4+5} 3.19 $\pm$ .182 mm. or less; body length usually 9 mm. or less. 22

20. Postabdomen as in fig. 20 . . . . . anisotae

- Postabdomen as in figs. 22 and 27 21

21. Postabdomen as in fig. 22; host Hyalophora promethea. . . . . .callosamiae

- Postabdomen as in fig. 27; hosts Antheraea polyphemus and Automeris io. . . . . .sabroskyi

22. Eyes with distinct pubescence visible under high magnification; two to three strong antero-dorsal bristles on middle tibiae; abdomen with a longitudinal band of erect hairs extending along midline of dorsum which are in sharp contrast to the adjacent depressed hairs . . . . . dimmocki

\- Eyes with at most slight pubescence visible under high magnification; one strong antero-dorsal bristle on middle tibiae; abdominal hairs uniformly depressed. 23

23. Ratio of frontal width at vertex to head width .366 ± .0124; host usually Euchaetias egle . . . . . euchaetiae

\- Ratio of frontal width at vertex to head width greater than above; host not Euchaetias egle . . . 24

24. Ratio of frontal width at vertex to head width .376 ± .0149; (posterior spiracles of puparium sunken into pits); host Hyalophora spp.. . . .ciliata

\- Ratio of frontal width at vertex to head width .380 ± .0137; (posterior spiracles of puparium flush with surface of puparium); host not Hyalophora spp. . . . . frenchii

DESCRIPTIONS

Lespesia aletiae (Riley), new combination

Figures 7, 19, 28.

Tachina aletiae Riley, 1879, p. 162.

Tachina fraterna Comstock, 1879, p. 303.

Achaetoneura aletiae, Allen, 1926, p. 188; Webber, 1930, p. 26; Patton, 1958, p. 31.

A medium sized species; over-all length about 8 mm. Distinguished from rileyi by having a dense, gray-pollinosity on the abdomen, whereas the abdomen in rileyi has extensive, bare, reddish areas. Distinguished from all other species of the genus by the absence of median marginal bristles on abdominal terga 2 and 3.

Male: Eyes with slight pubescence visible at high magnification. Face, front, and occipital orbits gray-pollinose, with a yellowish cast. Second and third antennal segments black. Arista tapered nearly uniformly for its entire length, thickened slightly on basal half. Frontal bristles about ten in number, extending to just below base of third antennal segment. Inner vertical bristles strong; outer verticals weak, scarcely differentiated from hairs of occipital fringe. Parafrontals with scattered black hairs outside frontal row, none of which is equal in size to the bristles of frontal row. Facial ridges bristled for about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, but posterior row irregular and weak. Beard thick, composed of white hairs.

Thorax gray-pollinose, sometimes with a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles.

Apical scutellar bristles erect, cruciate. Legs black and shining except for posterior surface of front femur, which is lightly gray-pollinose. Pulvilli of front tarsi about equal in length to last tarsal segment. Middle tibiae with one strong antero-dorsal bristle but no other bristles developed. Hind tibiae evenly ciliate, with one longer bristle near middle.

Abdomen black in ground color, gray-pollinose, without a yellowish cast, sometimes with a reddish spot laterally, extending from terga 2 to 4, but with the reddish area never so extensive as in rileyi, testacea, and ferruginea. Median marginal bristles lacking on abdominal terga 2 and 3; fourth tergum with a marginal row of bristles; fifth tergum with an irregular row of bristles near apex. Terminalia (fig. 7) distinctive; surstyli short and broad, cerci about the same length as surstyli but not so broad in relation to their length.

Female: Outer vertical bristles weak, about one-fourth size of inner verticals; pulvilli of front tarsi shorter than last tarsal segment; abdomen almost entirely covered with gray pollen which has a slight yellowish cast on tergum 5; if reddish areas are present they are usually small; tergum 5 of abdomen without a well defined row of bristles near apex but covered with large erect hairs on entire surface. Postabdomen (figs. 19 and 28) distinctive, long and attenuated.

Measurements: See Tables I and II.

Types: Riley's type appears to be lost and cannot be located in the U. S. National Museum. Webber (1930)

redescribed the species from one male and two females from Centerville, Florida, Nov. 23, 1878, reared from Alabama argillacea Hübner (= xylina Say). The specimens are labeled "468L08, par. on A. xylina, iss. Nov. 23, 1878." Webber did not designate a neotype. I have examined the aforementioned specimens and have used them as a basis for subsequent identifications. Since aletiae is a distinctive and easily recognized species, there seems little doubt that it has been correctly identified.

Hosts: Amatidae: Syntomeida epilais (11). Arctiidae: Diacrisia virginica (3), Estigmene acrea (4), Estigmene sp. (1), Halisidota harrisii (60), Halisidota sp. (1), Hyphantria cunea (7), Hyphantria sp. (1), Seirarctia echo (1), and Utetheisa bella (2). Hesperiidae: Epargyreus tityrus (2) and Urbanus proteus (1). Lasiocampidae: Malacosoma americana (2). Lymantriidae: Hemerocampa leucostigma (26) and Orygia sp. (1). Megalopygidae: Megalopyge opercularis (4) and Megalopyge sp. (1). Noctuidae: Alabama argillacea (1), Heliothis sp. (2), Laphygma frugiperda (1), Pseudaletia unipuncta (2), Trichoplusia ni (1), and Xanthopastis timais (2). Notodontidae: Datana ministra (3). Nymphalidae: Apatura sp. (8), Nymphalis antiopa (3), Polygonia interrogationis (1), and Vanessa cardui (1). Pieridae: Pieris protodice (3) and P. rapae (23). Pyralidae: Evergestis rimosalis (1). Sphingidae: Ceratomia catalpae (3). In addition to the above records from Lepidoptera, I have one record from Epilachna corrupta (Coleoptera: Coccinellidae).

Distribution: Ontario southward to southern Florida, westward to Arizona. Ontario: Port Erie. Alabama: Birmingham. Arizona: Ruby. Arkansas: Fayetteville. California: Los Angeles Co. and Watts. District of Columbia: Washington. Florida: Alford; Biscayne Bay; Centerville; Daytona; Gainesville; Homestead, Dade Co.; Larkins, Levy Co.; Ocala and St. Petersburg. Georgia: Savannah. Illinois: Carlinville and Sanbury. Indiana: Lafayette. Louisiana: Baton Rouge and Mt. Heyman. Maryland: Hagerstown. Mississippi: Agricultural and Mechanical College; Gulfport and Pascagoula. Missouri: Benton; Charleston and Sikeston. New Jersey: Burlington; Readington; Somerville; Trenton and West Long Branch. New Mexico: Albuquerque. New York: Brooklyn. North Carolina: Willard. Oklahoma: Durant. Pennsylvania: Philadelphia. South Carolina: Florence. Tennessee: Hurricane Mills; Monroe Co. and Nashville. Texas: College Station; Comfort; Shamrock and Victoria. Virginia: Accomac Co.; Arlington; Diamond Springs; Falls Church; Norfolk; Northampton Co.; Ravensworth; Rosslyn and Vienna.

Flight records: North of the 38th parallel, this species appears to have two peaks of abundance, one in July and another in September and October. Therefore, there may be two broods. South of the 38th parallel the flight records extend further into the fall and winter and begin earlier in the spring.

Lespesia anisotae (Webber), new combination

Figures 8, 20, 29.

Masicera datanarum Townsend, 1892, p. 287 (new synonymy).

Achaetoneura frenchii (in part), Webber, 1930, p. 7 (new synonymy).

Achaetoneura anisotae Webber, 1930, p. 13.

A large sized species, over-all length about 12 mm. Distinguished from all other species of the genus except schizurae by its large size; distinguished from schizurae by the presence of median marginal bristles on abdominal terga 2 and 3.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose with a faint yellowish cast. Second antennal segment black with a reddish tinge; third antennal segment black, reddish only at extreme base. Arista thickened on basal half, tapered rapidly apically. Frontal bristles about nine in number, extending to well below base of third antennal segment. Inner vertical bristles strong; outer verticals weak, about one-fourth size of inner verticals. Parafrontals with an irregular row of large black hairs outside frontal row, none of which is equal in size to bristles of the frontal row. Facial ridges bristled about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row irregular. Beard moderately thick, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Legs black, shining; with no trace of pollen except for posterior surface of front femur. Pulvilli of front tarsi about as long as last tarsal segment. Middle tibiae with one strong antero-dorsal bristle near middle and another about one-half size of strongest. Hind tibiae evenly ciliate with one longer bristle near middle.

Abdomen black in ground color; terga 2 to 4 gray-pollinose without a yellowish tinge, tergum 5 gray-pollinose with a definite, yellowish tinge; sometimes a red spot present laterally on tergum 3, which may extend to terga 2 and 4. Terga 2 and 3 each with a strong pair of median marginal bristles, tergum 4 with a strong marginal row of bristles, tergum 5 covered with erect hairs and an irregular row of bristles near apex. Terminalia (fig. 8) distinctive; cerci and surstyli extremely long and slender.

Female: Second antennal segment sometimes more reddish at base than male; pulvilli of front tarsi shorter than last tarsal segment; tarsi thickened in individuals bred from Anisota senatoria but not thickened in individuals bred from Datana spp. Postabdomen (figs. 20 and 29) distinctive, in lateral view venter of eighth sternite concave. Otherwise similar to male.

Measurements: See Tables I and II.

Types: Holotype, male, New Brunswick, New Jersey, July 18, 1925, Gip. Moth Lab. 11776K1, ex Anisota senatoria, Type No. 43048, U. S. National Museum; allotype, female, New Brunswick, New Jersey, July 20, 1925, Gip. Moth Lab. 11776K1, ex Anisota senatoria, Type No. 43048, U. S. National Museum.

Webber (1930) described the species from 25 specimens, so there were originally 23 paratypes. None of these paratypes can now be located in the U. S. National Museum.

Webber, at the time of his revision, determined a series of specimens reared from Datana integerrima and D. ministra as Achaetoneura frenchii. A re-examination of these specimens reveals that they are very close to anisotae. They are similar in size, general habitus, structure of the male terminalia, the female postabdomen and other characters. The only consistent difference that is apparent is that the front tarsi of the females are not thickened in the specimens bred from Datana spp., whereas the front tarsi are always thickened in females bred from Anisota senatoria. Therefore, it seems best to regard the form which breeds on Datana spp. as anisotae rather than frenchii.

Townsend (1892) described Masicera datanarum from four specimens without designating a holotype; two from Ithaca, New York, June 19 and 21 (no year), ex Datana sp., J. H. Comstock, one from Ottawa, Ontario, Canada, June 14

(no year), ex Antheraea polyphemus, W. Hague Harrington, and one collected specimen from Minnesota (Lugger). Of these original four, two have been located at The University of Kansas. In my opinion, two distinct species are represented in this syntypic series. A female from Ithaca, New York, June 19, is designated as lectotype of Masicera datanarum. The other remaining specimen, a female, is from Ottawa, Ontario, and is designated as holotype of Lespesia sabroskyi, new species (see p. 70).

Hosts: Arctiidae: Diacrisia virginica.[1] Citheroniidae: Anisota rubicunda (7), A. senatoria (66), A. virginiensis (11), and Anisota sp. (2). Notodontidae: Datana integerrima (18) and D. ministra (45).

Distribution: British Columbia to Quebec, southward to Florida and westward to California. British Columbia: Annis; Lavington and Mara Lake. Manitoba: Morden; Thornhill and Seddons Corner. Ontario: Belleville; Gordon Lake; Manitoulin Island; Petawawa; Stonecliff and West Bay. Quebec: Berthierville. Arizona: Paradise. California: Placer Co. Connecticut: Cromwell; Danielson; Deep River; Mystic; Preston and Putnam. District of Columbia. Florida: Gainesville; Monticello and Olena State Park. Georgia: Clayton and Pomona. Illinois: Forest Park and White Pine. Indiana: Brooksville. Kansas.

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[1]This record taken from Webber (1930). I have not been able to verify it.

Minnesota. Missouri: Kansas City. New Jersey: Franklin Park; Green Village; Kingston; Lucaston; New Brunswick and Whitesville. New Mexico: Jemez Springs and White Sands. New York: Alexandria; Baiting Hollow, Long Island; Elmira; Horseheads; Lawrenceville; Oswego; Reynoldsville and Watchogue. Pennsylvania: Montgomeryville and Quakertown. Rhode Island: Westerly. South Carolina: Clemson College. Texas: College Station. Virginia: Virginia Beach.

Flight records: North of the 38th parallel, this species appears to be most common during June and July.

Lespesia archippivora (Riley), new combination

Figures 4, 5, 6, 9, 21.

Tachina archippivora Riley, 1871, p. 150.

Masicera archippivora, Williston, 1889, p. 1923.

Meigenia websteri Townsend, 1891c, p. 206.

Phorocera promiscua Townsend, 1891a, p. 84.

Ypophaemyia malacosomae Townsend, 1916c, p. 75.

Parafrontina apicalis Brauer and Bergenstamm, 1893, p. 115.

Masicera pauciseta Coquillett, 1897, p. 114.

Masiceropsis pauciseta, Townsend, 1916a, p. 178.

Achaetoneura archippivora, Allen, 1926, p. 196; Webber, 1930, p. 20; Patton, 1958, p. 32; Butler, 1958, p. 561.

Webber (1930, p. 20) erroneously credited the name archippivora to Williston (1889) rather than Riley (1871). However, Riley did propose the name and did give a crude description. Therefore, the name is here credited to Riley.

A small species, over-all length 5 to 7 mm. The males are distinguished from all other species except parva by the pulvilli of the front tarsi which are shorter than the last tarsal segments, and from parva by their larger size. The females can be separated from parva by their larger size; from fasciagaster by the lack of black bands on the abdominal tergites; and from all other species by a ratio of frontal width at vertex to head width of .408 ± .0112 (all other species have a smaller ratio than this).

Male: Head (fig. 4) with eyes having slight pubescence visible at high magnification. Face and front gray-pollinose, former with a faint yellowish cast. Antennae mostly black, third antennal segment reddish only at extreme base, second segment with a reddish cast. Arista thickened on basal half, tapered rapidly apically. Frontal bristles about nine in number, extending to just below base of third antennal segment. Inner vertical bristles strong; outer verticals well developed, about one-half size of inner verticals. Parafrontals with scattered black hairs outside frontal row, none of which is equal in size to bristles of frontal row. Facial ridges bristled about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-fourth width of front. Bristles of occipital fringe in a double row but posterior row irregular and weak. Beard thick, composed of white hairs.

Thorax gray-pollinose. Mesonotum with four rather well defined black vittae visible from postero-dorsal view

which vary in intensity in different reflections. Three lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black and shining, with a reddish tinge, except for posterior surface of front femur, which is thinly gray-pollinose. Pulvilli of front tarsi shorter than last tarsal segment. Middle tibiae with one strong antero-dorsal birstle, no other bristles developed. Hind tibiae ciliate with one longer bristle near middle.

Abdomen black in ground color, gray-pollinose without a yellowish cast with exception of fifth tergum; occasionally a bare red spot present laterally on tergum 3. Median marginal bristles present or absent on tergum 2; present on tergum 3; third tergum with a marginal row of bristles; fifth tergum irregularly bristled on apical half. Terminalia (fig. 9) similar to those of melalophae.

Female: Second antennal segment more reddish. Otherwise similar to male.

Measurements: See Tables I and II.

Types: Redescribed from three female syntypes (no. 2840, U. S. N. M.) and one male from the same locality as the types, without further data except a label bearing the number 60. These specimens are in the U. S. National Museum. They are apparently the specimens Riley had before him when he described the species because the 60 seems to correspond to code numbers found in some old notes made by Riley at the time he reared the flies. It would be very difficult to prove otherwise at this late date; hence these

specimens are here accepted as the types. They were reared from Danaus plexippus (L.).

Type locality: St. Louis, Missouri.

Hosts: Arctiidae: Estigmene acrea (9) and Estigmene sp. (1). Danaidae: Danaus berenice (3) and D. plexippus (150). Lasiocampidae: Malacosoma americana (31), M. constricta (1), M. disstria (1), M. pluvialis (2), and Malacosoma sp. (4). Noctuidae: Agrotis ypsilon (1), Euxoa vestigialis (1), Feltia subterranea (1), Laphygma exigua (2), Prodenia praefica (1), Prodenia sp. (2), and Scotogramma trifolii (1). Notodontidae: Schizura concinna (1). Nymphalidae: Nymphalis antiopa (4), Vanessa atalanta (20), V. cardui (15), and V. caryae (7). Papilionidae: Papilio sp. (1). Pyralidae: Loxostege sticticalis (19). Pieridae: Pieris protodice (12), P. rapae (17), and Pieris sp. (2). In addition to these records from Lepidoptera, I have one record from Pristiphora erichsonii (Hymenoptera: Tenthredinidae).

Distribution: British Columbia to Ontario, southward to Florida and southern Mexico and westward to California, Oregon and Washington. Alberta: Lethbridge. British Columbia: Kamloops. Ontario: Toronto and Wade. Mexico: Atzcapotzalco; Elta Clax; Hermosilla; Los Mochis; Mexico D. F. and Tepexpan. Arizona: Buckeye; 20 mi. N Flagstaff; Hot Springs; Phoenix; Sahuarita; Seligman; south fork Cave Creek Canyon, Chiricahua Mountains; Tempe; Thatcher; Topock and Yuma. Arkansas: Sebastian Co. and Washington Co. California: Alameda Co.; Alum Rock Park, Santa Clara Co.;

Antioch, Contra Costa Co.; Amboy, San Bernardino Co.; Apple Valley, San Bernardino Co.; Berkeley; Brawley; Carlsbad; Cherry Valley; Chula Vista; Claremont; Compton; Davis; El Centro; Firebaugh, Fresno Co.; Gilroy; Hopkins Well, Riverside Co.; 6 mi. W Indio, Riverside Co.; Isleton; 25 mi. S Ivanpah, San Bernardino Co.; Kramer Hills, San Bernardino Co.; Lindsay; Los Alamitos; Los Angeles Co.; Macy; Mono Lake; Mt. Diablo, Contra Costa Co.; Niland, Imperial Co.; Palo Alto; Patterson, Stanislaus Co.; Pleasanton; Riverside; Redwood City, Tulare Co.; Sacramento; San Joaquin; San Jose; San Mateo; Saticoy; Saugus; Seal Beach; Shafter; Spreckels; Tracy, San Joachin Co.; Westmoreland; Whittier and Wood Lake, Tulare Co. Florida: Belle Glade. Georgia: Griffin. Idaho: Jerome; Lewiston and Moscow. Illinois: Cambridge; Carbondale; Carlinville and Urbana. Indiana: Attica and Lafayette. Iowa: Ames and Mount Ayr. Kansas: Garden City; Lawrence; Leavenworth Co. and Wellington. Louisiana: Baton Rouge. Maine: Augusta; Ellsworth; Glenburn and Ogunquit. Maryland: Hagerstown. Massachusetts: Amherst; Cambridge; Chicopee; Lexington; Melrose Highlands; Revere; near Salem and Wakefield. Michigan: Cheboygan Co. and Emmett Co. Mississippi: Agricultural and Mechanical College; Hamburg and Tupelo. Missouri: Atherton and St. Louis. Nebraska: North Platte. Nevada: Baker. New Hampshire: Claremont. New Jersey: North Branch and Somerville. New Mexico: Beulah; Koehler; Malaya; Mesilla and Roswell. New York: Albany; Hebron; Ithaca; Lake Placid and Slingerlands. Ohio: Lima; Miami Co. and

Sandusky. Oregon: Klamath Falls and Vale. Pennsylvania: Lancaster and New Wilmington. South Carolina: St. Matthews. South Dakota: Brookings. Tennessee: Clarksville; Hurricane Mills and Nashville. Texas: Bexar Co.; Brownsville; Chillicothe; College Station; Dallas; Raymondsville; San Diego; Sinton; Spur and Victoria. Utah: Birch Glen; Delta; Elberta; Granite; Lewiston; Logan; Midvale; Mono; Monticello; Nibley; Provo; Richardson; Roy; Rush Lake, Iron Co.; Smithfield and Vernal. Virginia: Norfolk. Washington: Edwall; Lind and Pullman. Wisconsin: Madison.

Flight records: North of the 38th parallel, this species is most common from July through September. For both June and October, I have approximately one third as many records as for any one of the peak months of July through September. South of the 38th parallel, scattered records extend throughout the winter.

Lespesia callosamiae, n. sp.

Figures 10, 22.

A large sized species, over-all length 10 to 12 mm. Extremely close to sabroskyi, from which it can be separated by the form of the male terminalia (figs. 10 and 18) and the female postabdomen (figs. 22 and 27), and by the host, if known. L. callosamiae has been reared only from Hyalophora promethea whereas L. sabroskyi has been reared from Antheraea polyphemus, Automeris io and H. euryalus. This species is similar in size to anisotae, from which it may

be separated by the shape of the male terminalia (figs. 10 and 8) and the female postabdomen (figs. 22 and 20). Other species which are morphologically similar to callosamiae such as euchaetiae, ciliata, and frenchii may usually be separated from callosamiae by their smaller body size.

Male: Eyes with very slight pubescence visible at high magnification. Face and front gray-pollinose, both with a yellowish cast. Second and third antennal segments black. Arista thickened on basal one-half, tapered rapidly apically. Frontal bristles about ten in number, extending to below base of third antennal segment. Inner vertical bristles strong, outer verticals about one-third size of inner verticals. Parafrontals with scattered black hairs outside frontal row and a row of hairs parallel to frontal row, all of which are much smaller than bristles of frontal row. Facial ridges bristled for about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row fairly regular. Beard of medium thickness, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black and shining, with a reddish tinge, with very little pollen except for posterior surface of front femur, which is gray-pollinose.

Pulvilli of front tarsi about as long as last tarsal segment. Middle tibiae with one strong antero-dorsal bristle near middle and usually another bristle about one-third the size of strong bristle. Hind tibiae evenly ciliate with one longer bristle near middle.

Abdomen black in ground color, gray-pollinose with a slight yellowish cast which is most pronounced on tergum 5. Tergum 3 usually with a red spot laterally which may extend to terga 2 and 4. Terga 2 and 3 each with one pair of median marginal bristles; tergum 4 with a marginal row of bristles; tergum 5 with an irregular row of bristles at about two-thirds distance from base to apex. Terminalia (fig. 10) distinctive, surstyli with a distinct convexity on their posterior edge.

Female: Pulvilli of front tarsi shorter than last tarsal segment; postabdomen (fig. 22) similar to that of euchaetiae. Otherwise similar to male.

Measurements: See Tables I and II.

Types: Described from 25 specimens, all of which were reared from Antheraea promethea. Holotype, male, Milford, Connecticut, July 8, 1918, Gip. Moth Lab. 12128P4. Allotype, female, Rutherford, New Jersey, July 3, 1916, Gip. Moth Lab. 10059. Paratypes, 15 males and 8 females from the following localities. Connecticut: Milford, July 10, 1928, Gip. Moth Lab. 12128P4; New Haven, June 29- July 2, 1928, Gip. Moth Lab. 12128P7. New Jersey: Rutherford, June 5- July 24, 1916, July 16, 1917, Gip. Moth Lab. 10059. New York: Coonrad, July 23, 1938, Gip.

Moth Lab. 12128N6; Rochester, July 25, 1916, Gip. Moth Lab. 10060A. Ohio: Bratenahl, July 28, 1916, Gip. Moth Lab. 10059F.

Host: Saturniidae: Hyalophora promethea (42).

Distribution: In addition to the locality records taken from the type series, the following locality records are represented by 30 specimens not included in the type series. Ontario: Marmora and Roseland. Maryland: Prince George Co. New Jersey: Orange; Parlin; Rahway and Trenton. New York: Chemung and East Aurora. Oregon: Eugene and vicinity. Pennsylvania: Berwyn; Harrisburg; Indiana; Ingrain and Shamokin. Virginia: Falls Church.

Flight records: This species has been most frequently collected during July.

Lespesia ciliata (Macquart)

Figures 11, 23, 30.

Erycia ciliata Macquart, 1834, p. 294.

Lespesia ciliata, Robineau-Desvoidy, 1863, p. 569.

Achaetoneura samiae Webber, 1930, p. 15 (new synonymy).

Robineau-Desvoidy (1863, p. 569 based Lespesia ciliata on a specimen in the Museum National d'Histoire Naturelle, Paris labeled Masicera ciliata Macquart for which he never found a published description. Mr. Curtis Sabrosky (personal communication, 1960) believes that this species was originally published as Erycia ciliata as cited above.

I have not examined the type of Lespesia ciliata but Dr. George W. Byers kindly examined it at my request. He compared several species of Lespesia with this type and found that what has been known as samiae agreed with it.

Since ciliata was the sole species included in Lespesia by Robineau-Desvoidy, it becomes type species of the genus by monotypy.

Since Lespesia as circumscribed here is exclusively Nearctic, there remains some doubt as to how Robineau-Desvoidy happened to include it in a treatise on the Diptera of the Paris area. Mesnil (1950) speculates that some saturnid larvae may have been shipped to France from the United States in the hope that they would produce silk well enough to take the place of the silkworm, Bombyx mori, which had been decimated by a disease. The specimen in question may have been reared from such a saturnid larva, and subsequently placed in the collection of Macquart in the Paris museum.

A medium sized species, over-all length 7 to 9 mm. It is most readily recognized by its puparium, which has the posterior spiracles located in a depression on the horizontal axis. All other species have the posterior spiracles of the puparium flush with the surface of the puparium.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose, both with a yellowish cast. Second antennal segment black with a reddish tinge, third antennal segment black. Arista thickened

on basal two-thirds, tapered rapidly apically. Frontal bristles about ten in number, extending to below base of third antennal segment. Inner vertical bristles strong, outer vertical bristles about one-fourth size of inner verticals. Parafrontals with a row of hairs outside frontal row which may be as large as one-half size of the bristles of frontal row. Facial ridges bristled about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row very irregular. Beard of moderate thickness, composed of white hairs.

Thorax black in ground color, gray-pollinose without a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three or four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black with a faint reddish tinge, without pollen except for posterior surface of front femur. Pulvilli of front tarsi a little longer than last tarsal segment. Middle tibiae with one strong antero-dorsal bristle near middle and usually another bristle about one-half size of strongest bristle. Hind tibiae evenly ciliate, with one longer bristle near middle.

Abdomen black in ground color, heavily gray-pollinose, without a yellowish cast except for fifth tergum. Tergum 3 usually with bare red spots laterally. Median marginal bristles present on abdominal terga 2 and

3; fourth tergum with a marginal row; fifth tergum more or less bristled on entire surface. Terminalia (fig. 11) similar to those of anisotae; cerci and surstyli long and attenuated.

Female: Outer vertical bristles stronger, about one-half size of inner verticals; third antennal segment more reddish, reddish on at least basal half; pulvilli of front tarsi shorter than last tarsal segment; postabdomen (figs. 23, 30) distinctive, short and broad.

Measurements: See Tables I and II.

Type: Holotype, male, labelled "Salia eclose d'un Bombyx" (no other data), in the Museum National d'Histoire Naturelle, Paris, France. The type locality remains in doubt because it is not known where the caterpillar from which the fly emerged originated.

Hosts: Saturniidae: Hyalophora cecropia (353), H. columbia nokomis (23), H. gloveri (12), H. euryalus (15), and Hyalophora sp. (18).

Distribution: From British Columbia eastward to Nova Scotia, southward to the District of Columbia and westward to California and Oregon. British Columbia: Fernie and Kaslo. Manitoba: Aweme; Cartwright and Transcoma. New Brunswick: Fredricton and Sunbury. Nova Scotia: Hunts Co.; Kings Co. and Truro. Ontario: L'Orignal; Ottawa and Steenburg. Quebec: Montreal. Saskatchewan: Saskatoon. Arizona: Palmerlee. California: San Bernardino Mts.; and West Pittsburg, Contra Costa Co. Connecticut: Ellington and Mansfield.

District of Columbia: Washington. Maine: Bangor; Bar Harbor; Carmel; Fryeburg; Norway; Orono and Waterville. Massachusetts: Amherst; Boxford and North Saugus. New Hampshire: Durham and Greenfield. New Jersey: Berlin; Green Village; Lakehurst and Rutherford. New York: Albany; Fisher's Island; Ithaca; Kingston; Margaretville; Putnam and Putnam Valley. Oregon: Corvallis. Rhode Island: Newport. Utah: Stockton.

Flight records: This is apparently an early season species. North of the 38th parallel, most of the records are for April and May. However, a good many of these records are for reared specimens which emerged from pupae which had been kept indoors over the winter. Therefore, the majority of the flies probably emerged earlier than they would have in nature.

Lespesia cuculliae (Webber), new combination

Figure 24.

Achaetoneura cuculliae Webber, 1930, p. 18; Patton, 1958, p. 32.

A medium sized species, length 8 to 10 mm. It is separated from all other species except pholi, laniiferae, and schizurae by median marginal bristles which are absent on abdominal tergum 2 but present on abdominal tergum 3. It can be separated from pholi by the lack of a yellowish cast in the thoracic pollen; from laniiferae by the presence of a longer bristle in the ciliate row on the hind tibiae; and from schizurae by the third antennal

segment which is less than 3.0 times the length of the second.

Female: Eyes with very slight pubescence visible at high magnification. Face, front and posterior surface of head silvery gray-pollinose, usually without a yellowish cast although an occasional specimen is encountered which is distinctly golden-pollinose in these regions. Second and third antennal segments black; third antennal segment less than 3.0 times length of the second (in all other species the third antennal segment is more than 3.0 times length of second). Arista thickened on basal one-half, tapered rapidly apically. Frontal bristles about eight in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals about one-third size of inner verticals. Parafrontals with very small scattered black hairs outside the frontal row none of which is equal in size to the bristles of frontal row. Facial ridges bristled weakly about one-third distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-fourth width of front. Bristles of occipital fringe in a double row, posterior row fairly strong and regular. Beard of medium thickness, composed of white hairs.

Thorax gray-pollinose and usually without a yellowish cast. Mesonotum with four well defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles cruciate, sometimes erect and

sometimes recumbent. Legs black with a reddish tinge, bare and shining, except for posterior surface of front femur, which is lightly gray-pollinose. Pulvilli of front tarsi shorter than last tarsal segment. Middle tibiae with one strong antero-dorsal bristle near middle; if other bristles are developed they are very weak. Hind tibiae ciliate with one longer bristle near middle.

Abdomen black in ground color, heavily gray-pollinose; fifth tergum with a slight yellowish cast; usually without a bare red spot laterally. Median marginal bristles absent on tergum 2; present on tergum 3; fourth tergum with a strong marginal row; fifth tergum heavily covered with large scattered bristles on apical half which are not in rows. Postabdomen (fig. 24) distinctive, short and broad.

Male: Unknown. Webber (1930, p. 19) described the species from one female but placed specimens of both sexes together with this female and referred them provisionally to this species. The two males in this series are in such poor condition that I am unable to determine whether they belong to this species or not; therefore, the male of this species remains unknown.

Type: Female, Falls Church, Virginia, Sept. 27, 1917, ex Cucullia sp., Type No. 43050, U. S. National Museum.

Hosts: Noctuidae: Cucullia sp. (1). Notodontidae: Datana angusi (1) and Dasylophia anguina (2).

Distribution: Maine westward to Manitoba, southward to Florida and southwestward to Arkansas. Manitoba: Aweme. Arkansas: Washington Co. Florida: Plant City. Maine: Baxter State Park. Maryland: Chesapeake Beach and Plummer Island. Massachusetts: Melrose Highlands. Minnesota: Olmstead Co. Mississippi: Agricultural and Mechanical College. New Jersey: Somerville. New York: Babylon, Long Island; Baiting Hollow, Long Island; Maybrook and Wading River, Long Island. Virginia: Falls Church.

Flight records: North of the 38th parallel this species has been taken from June through September.

Lespesia dimmocki (Webber), new combination Achaetoneura dimmocki Webber, 1930, p. 20.

A medium sized species, over-all length 7 to 9 mm. The females are easily distinguished from all other species by the longitudinal row of erect hairs that extend along the mid-dorsal line of the abdomen and stand out in sharp contrast to the adjacent depressed hairs. The males are recognized by the presence of two or more strong antero-dorsal bristles on the middle tibiae.

Male: Eyes with distinct pubescence visible at high magnification. Face and front gray-pollinose, front usually with a yellowish cast. Second antennal segment reddish brown, third antennal segment black. Arista thickened on basal two-thirds, tapering rapidly apically. Frontal bristles about eight in number, extending to just below base of third antennal segment. Inner vertical

bristles strong, outer verticals weak. Parafrontals with a regular row of bristles outside frontal row which sometimes are as large as one-half size of bristles of frontal row. Facial ridges bristled weakly about one-half distance from vibrissae to antennal bases, bristles widely and irregularly spaced. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row very irregular, scarcely discernible. Beard thin, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three lateral scutellar bristles. Apical scutellar bristles long, erect and cruciate. Legs black with a slight reddish tinge, without pollen except for posterior surface of front femur. Pulvilli of front tarsi about as long as last tarsal segment. Middle tibiae with 2 to 5 strong antero-dorsal bristles near middle. Hind tibiae evenly ciliate with one longer bristle near middle.

Abdomen black in ground color, gray-pollinose without a yellowish cast except on tergum 5. Sometimes a bare red spot is present laterally on tergum 3. Terga 2 and 3 each with one pair of strong median marginal bristles; tergum 4 with a strong marginal row; tergum 5 bristled on entire surface, the bristles not in rows. Terminalia not examined.

Female: Inner vertical bristles strong, outer verticals about one-half size of inner verticals; abdomen

with a longitudinal row of erect hairs extending along midline of dorsum, which stand out in sharp contrast to the adjacent depressed hairs. Otherwise similar to male.

Types: Holotype, male, Springfield, Massachusetts, June 5, 1898, G. Dimmock no. 1346a, Type No. 43051, U. S. National Museum. Allotype, female, same data as holotype. Paratypes, one male and two females, same data as holotype; one male and two females, Tatham, Massachusetts, July 15, G. Dimmock Nos. 1516b-d, ex Automeris io.

Hosts: Noctuidae: Simyra henrici (1). Saturniidae: Automeris io (3).

Distribution: Manitoba: Awene. Quebec: Chateauguay. Maryland: Plummer Island. Massachusetts: Springfield and Tatham. Ohio: Columbus. Pennsylvania: Philadelphia.

Flight records: This species has been taken from May through August.

Lespesia euchaetiae (Webber), new combination

Figures 12, 25, 31, 34A-B.

Achaetoneura euchaetiae Webber, 1930, p. 11.

A medium-large sized species, over-all length about 10 mm. It is most readily distinguished from all other species by the location of the posterior spiracles of the puparium, which are always located well above the horizontal axis (fig. 34A). In all other species, the posterior spiracles are located on or near the horizontal axis. In the absence of a puparium, the males may be recognized by

their distinctive terminalia (fig. 12). The females can be easily confused with those of ciliata, but they may be separated by their longer and more attenuated postabdomen (figs. 25, 31 and 23, 30). The females may be separated from females of the frenchii complex by the front which is wider at the vertex in relation to the head width (see Table II).

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose, the latter with a yellowish cast. Second antennal segment black with a reddish tinge, third antennal segment black except at extreme base. Arista thickened on basal one-half, tapered rapidly apically. Frontal bristles nine to eleven in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals about one-third size of inner verticals. Parafrontals with a regular row of bristles outside frontal row which are at most one-fourth size of bristles of frontal row. Facial ridges bristled about one-half distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row very irregular, sometimes apparently nonexistant. Beard of moderate thickness, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four well defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three to four lateral scutellar bristles,

three more common. Apical scutellar bristles erect, cruciate. Legs black without a reddish tinge; without pollen except for posterior surface of front femur. Pulvilli of front tarsi about equal in length to last tarsal segment. Middle tibiae with one strong and one weak antero-dorsal bristle near middle Hind tibiae evenly ciliate with one longer bristle near middle.

Abdomen black in ground color, gray-pollinose without a yellowish cast except on tergum 5. Sometimes a bare red spot present laterally on tergum 3. Terga 2 and 3 each with one strong pair of median marginal bristles; tergum 4 with a strong marginal row; tergum 5 irregularly bristled on entire surface but with bristles strongest on apical half. Terminalia (fig. 12) distinctive; cerci and surstyli short and broad, cerci with a concavity on their posterior edge.

Female: Pulvilli of front tarsi shorter than last tarsal segment; postabdomen long and attenuated (figs. 25 and 31). Otherwise similar to male.

Measurements: See Tables I and II.

Types: Holotype, male, Redwood, New York, July 18, 1927, Gip. Moth Lab. 12130M9, ex Euchaetias egle, Type No. 43047, U. S. National Museum. Allotype, female, Hingham, Massachusetts, July 24, 1925, Gip. Moth Lab. 12130H5, ex Euchaetias egle. According to Webber (1930, p. 12), 23 paratypes were included in the original type series but none of these can now be located in the U. S. National Museum.

Hosts: Arctiidae: Euchaetias egle (224) and Halisidota tessellaris.[1]

Distribution: From southern Ontario southward to Kansas and from New England westward to South Dakota. Ontario: Cobden. Connecticut: Manchester; Pomfret; Putnam; Thompson; Willimantic and Woodstock. Kansas: Lawrence. Massachusetts: Dover; Hingham; Holliston and Sherborn. New Hampshire: Pelham. New Jersey: Bernardsville; Bridgewater; Clinton; Cranbury; Glen Gardner; Liberty Corners; North Branch; Plunkemin; Ringoes; Schooleys Mountain; Somerville and Stirling. New York: Adams; Bergen; Campbell; Chemung; Cortland; Crown Point; Dansville; Dekalb; Edwardsville; Elmira; Fulton; Geneva; Ithaca; Leyden; Mycenae; Natural Bridge; Newburgh; Pierrepont; Redwood; Saratoga Springs; Waverly and Wayland. Pennsylvania: Dingmans Ferry; Glendale; Milford; Rush; Sellersville; Tunkhannock and Whitemarsh. South Dakota: Big Stone City.

Flight records: This species appears to be most abundant during July.

Lespesia fasciagaster, n. sp.

A medium sized species, over-all length about 8 mm. Distinguished from all other species of the genus except parva by the distinct black transverse bands on the abdominal terga and from parva by its larger size.

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[1]This record taken from Webber (1930). It is subject to question because I have not been able to verify it.

Female: Eyes bare. Face, front, and posterior surface of head silvery-pollinose. Second antennal segment red; third antennal segment red on proximal half, black on distal half. Arista thickened on basal two-thirds, tapered rapidly on distal third. Frontal bristles usually nine in number, extending to just below base of third antennal segment. Parafrontals with scattered black hairs outside frontal row, none of which is equal in size to bristles of frontal row. Facial ridges bristled for about two-thirds distance from vibrissae to antennal bases, bristles in a double row. Frontal vitta reddish brown, about one-third width of front. Bristles of occipital fringe in a double row. Beard thin, composed of white hairs.

Thorax heavily gray-pollinose with a very faint yellowish cast on some specimens. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black with a very slight reddish tinge. Middle tibiae with one strong antero-dorsal bristle. Hind tibiae ciliate with one longer bristle near middle, bristles rather widely spaced.

Abdomen black in ground color and heavily gray-pollinose with no yellowish cast on any segment. Second tergum black; terga 3 to 5 with prominent black bands on posterior margins. Terga 2 and 3 each with a strong pair of median marginal bristles; tergum 4 with a strong marginal row of widely spaced bristles; tergum 5 bare on

proximal two-thirds followed by a transverse row of bristles, distal one-third of segment irregularly bristled. Postabdomen similar to that of frenchii.

Male: Unknown.

Measurements: See Table II.

Holotype: Female, College Station, Texas, October 4, 1921, H. J. Reinhard.

Paratypes: Three females, College Station, Texas, July 10, 1918, October 2, 1921, and April 18, 1935, H. J. Reinhard; one female, Bexar Co., Texas, September 26, 1931, H. J. Reinhard; one female, Sanford, Florida, August 4, 1930, J. Nottingham.

The holotype has been deposited in the U. S. National Museum. Two paratypes have been placed in the Snow Entomological Museum, The University of Kansas and three have been sent to Professor H. J. Reinhard at Texas Agricultural and Mechanical College.

Hosts: Unknown.

Lespesia ferruginea (Reinhard), new combination

Frontina ferruginea Reinhard, 1924, p. 269.

Achaetoneura ferruginea, Webber, 1930, p. 33.

A small and easily recognized species, over-all length 5 to 7 mm. Separated from all other species except rileyi and testacea by the extensive red areas on the abdomen and from rileyi and testacea by the presence of three lateral scutellar bristles rather than four.

Male: Eyes almost completely bare, with practically no pubescence visible at high magnification. Face and front gray-pollinose, front with a faint yellowish cast. Second antennal segment reddish brown, third antennal segment black. Arista thickened on basal half, tapered rapidly apically. Parafrontals with scattered black hairs outside frontal row none of which is equal in size to bristles of frontal row. Facial ridges bristled about two-thirds distance from vibrissae to antennal bases, bristles rather widely spaced. Frontal vitta brown, about one-third width of front.

Thorax black in ground color, thickly gray-pollinose with a yellowish cast. Mesonotum with four well defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three lateral scutellar bristles. Legs black with a yellowish tinge, without pollen except for posterior surface of front femur. Pulvilli of front tarsi shorter than last tarsal segment. Middle tibiae with one strong antero-dorsal bristle near middle and another about one-half size of strong bristle. Hind tibiae evenly ciliate with one longer bristle.

Abdomen red with the exception of a longitudinal black band extending down mid-line of dorsum, without pollen except for narrow bands on anterior margins of terga 3 to 5. Terga 2 and 3 each with one pair of median marginal bristles; tergum 4 with a marginal row; tergum 5 with a submarginal row of bristles near apex. Terminalia not seen by me.

Female: Third antennal segment more reddish on basal half; pulvilli of front tarsi about as long as last tarsal segment; postabdomen not seen. Otherwise similar to male.

Types: Holotype, male, College Station, Texas, Sept. 29, 1920, H. J. Reinhard, Type No. 27577, U. S. National Museum. Paratype, female, same data as holotype except that the collection date is July 11, 1920. The remainder of the type series of five males and two females in the collection of H. J. Reinhard.

Hosts: Unknown.

Distribution: College Station, Texas. As far as I know, no additional specimens have been found since the species was described.

Lespesia flavifrons, n. sp.

Over-all length about 9 mm. Distinguished from all other species of the genus except texana by the golden-pollinose face and front and from texana by the facial depression which is silvery-gray instead of golden.

Male: Eyes with slight pubescence visible at high magnification. Face and front distinctly golden-pollinose; posterior surface of head silvery-pollinose. Facial depression silvery gray-pollinose. Antennae black except for extreme base of third segment which is red. Arista thickened on basal half, tapered rapidly apically. Frontal bristles about nine in number, extending to below base of third antennal segment. Inner vertical bristles strong,

outer verticals absent. Parafrontals with scattered black hairs outside frontal row, none of which is equal in size to bristles of frontal row. Facial ridges bristled about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta dark brown, about one-third width of front. Bristles of occipital fringe in a double row; posterior row irregular, composed of widely spaced bristles. Beard thick, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three to four lateral scutellar bristles. Legs black with no pollen except for posterior surface of front femur. Middle tibiae with one strong antero-dorsal bristle and another about one-half size of strongest. Hind tibiae ciliate, with one longer bristle near middle.

Abdomen black in ground color; terga 2 to 4 gray-pollinose without a yellowish tinge, tergum 5 gray-pollinose with a definite yellowish tinge. Terga 2 and 3 each with a strong pair of median marginal bristles; tergum 4 with a marginal row of bristles; tergum 5 with bristles irregularly scattered over entire surface. Terminalia not distinctive, similar to those of frenchii.

Female: Face and front bright golden-pollinose. Third antennal segment red, second segment black. Inner vertical bristles strong, outer vertical bristles about

one-half size of inner verticals. Postabdomen distinctive, short and broad. Otherwise similar to male.

Measurements: See Tables I and II.

Holotype. Male, Melrose Highlands, Massachusetts, emerged June 1, 1931, from Paonias myops S. & A., C. Griswold.

Allotype. Female, Melrose Highlands, Massachusetts, emerged June 5, 1931, from Smerinthus jamaicensis Say, Griswold and Baker.

Paratypes. Four males, Melrose Highlands, Massachusetts, emerged June 1-2, 1931, from Paonias myops S. & A., C. Griswold; two males, Stroudsburg, Pennsylvania, emerged Sept. 11, 1929, from Paonias myops S. & A.; two females, Stroudsburg, Pennsylvania, emerged Sept. 17, 1929, from Paonias myops S. & A.; six females and one male, Melrose Highlands, Massachusetts, emerged Oct. 17, 1930, from Smerinthus jamaicensis Say, C. Griswold; one male and one female, Melrose Highlands, Massachusetts, emerged Oct. 10, 1930, from S. jamaicensis, C. Griswold; one female, Lafayette, Indiana, Sept. 16, 1917, J. M. Aldrich; one female, Washington, District of Columbia, H. G. Dyar; one female, Blackjack Creek, Pottawatomie Co., Kansas, July 9, 1951, H. E. Evans; one female, Medora, Kansas, June 24, 1936, M. B. Jackson.

Hosts: Sphingidae: Paonias myops (9), Smerinthus cerisyi (9), Smerinthus jamaicensis (10) and Smerinthus sp. (12).

Distribution: From British Columbia eastward to Newfoundland, southward to the District of Columbia. In addition to the type series, specimens have been examined from the following localities. Alberta: Elk Island Park and Irma. British Columbia: Mile 51, Big Bend Highway; Bigmouth Creek and Princeton. Newfoundland: Hamber. Ohio: Sugar Grove.

Flight records: On the basis of the limited material available, this species appears to be most common during September and October.

Lespesia frenchii (Williston), new combination

Figures 3, 13, 32, 33.

Masicera frenchii Williston, 1889, p. 1923.

Achaetoneura hesperus Brauer and Bergenstamm, 1891, p. 334.

Frontina malacosomae Curran, 1925, p. 155.

Frontina sordida Curran, 1926, p. 171, new name for malacosomae Curran, preoccupied.

Achaetoneura frenchii, Webber, 1930, p. 7.

It appears that several distinct species have heretofore been included under this name, and an attempt has been made to separate and describe them in this revision.

A medium sized species, over-all length 7 to 8 mm. Distinguished from all other species by the form of the male terminalia, which are unusually small relative to the body size with short cerci and surstyli (fig. 13) and by the characters given in the key.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose with a slight yellowish cast. Second and third antennal segments black. Arista thickened on basal one-half, tapered rapidly apically. Frontal bristles six to eight in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals very weak, scarcely differentiated from adjacent hairs of occipital fringe. Parafrontals thickly haired outside frontal row, none of hairs equal in size to bristles of frontal row. Facial ridges bristled about three-fourths distance from vibrissae to antennal bases. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row very irregular. Beard of moderate thickness, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three to four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black, without pollen except for posterior surface of front femur. Pulvilli of front tarsi about as long as last two tarsal segments together. Middle tibiae with one strong antero-dorsal bristle near middle, sometimes another bristle is present which is always less than one-half the size of strong bristle. Hind tibiae ciliate with one longer bristle.

Abdomen black in ground color; gray-pollinose without a yellowish cast except on tergum 5; usually with a

bare red spot laterally on tergum 3. Terga 2 and 3 each with one pair of median marginal bristles; fourth tergum with a marginal row; fifth tergum irregularly bristled on entire surface. Terminalia smaller relative to size of fly than in other species (fig. 13). Cerci and surstyli short and broad; subequal to each other in length and width.

Female: Third antennal segment reddish on basal half; outer vertical bristles stronger, about one-half size of inner verticals; pulvilli of front tarsi shorter than last tarsal segment. Otherwise similar to male.

Measurements: See Tables I and II.

Types: Williston (1889) described the species from five specimens from Moosehead Lake, Maine, November 26, 1881, ex Papilio (= Jasoniades) glaucus, S. H. Scudder. Of these five, one male still exists in the Museum of Comparative Zoology at Harvard University, and this specimen is here designated as lectotype. It is dated Nov. 15, 1881, instead of Nov. 26 as stated by Williston. The abdomen is broken off but the remainder of the specimen is in good condition.

Hosts: Lasiocampidae: Malacosoma americana (192), M. disstria (192), M. disstria erosa (5), M. fragilis (5), M. pluvialis (7) and Malacosoma sp. (14). Lymantriidae: Stilpnotia salicis (1). Papilionidae: Papilio bairdii oregonia (2), P. daunus (10), P. eurymedon (7), P. glaucus (1), P. glaucus canadensis (1), P. glaucus turnus (2), P. rutulus (18) and Papilio sp. (5). Sphingidae: Ceratomia

amyntor (11), C. catalpae (1), C. undulosa (269), Sphinx chersis (21) and S. kalmiae (4).

Distribution: From British Columbia eastward to Nova Scotia, southward to Florida and westward to California, Oregon and Washington. Alberta: Edmonton and Lacombe. British Columbia: Royal Oak and Victoria. Manitoba: Aweme and Whiteshell Forest. New Brunswick: Fredricton; Harcourt; Kent Co.; Rest and York Co. Nova Scotia: Annapolis; Coldbrook; Kings Co. and Truro. Ontario: Cameron Lake; Dorset; Emo; Franz; Galt; Greely; Jamot; Kapuskasing; Little Rapids; MacLennan township, Sudbury District; Milford Bay; Port Carling; Port Arthur; Ridgetown; Rousseau; Scadding township; Sellers; Senneterre; Simcoe; Sowerbu; Sudbury and West Ferris. Quebec: Kenogami; Laniel; River Turgeon and Senneterre. Saskatchewan: Glaslyn and Wood Mountain. Arizona: Sitgreaves National Forest. California: Berkeley; Blue Canyon; Mt. Shasta City, Siskiyou Co.; Oakland; Placer Co.; Sonoma Co.; Truckee and 4 mi. S Weed, Siskiyou Co. Colorado: Denver and Estes Park. Connecticut: Mansfield and Manchester. District of Columbia: Washington. Florida: Croom. Illinois: Carlinville. Maine: Augusta; Bath and Waldoboro. Maryland: Boonsboro. Massachusetts: Cheshire; Gloucester; Harwich; Melrose Highlands; Saugus; Sharon and Wilmington. Minnesota: Cass Co. and Star Island. Montana: Bozeman. New Hampshire: Milford. New Jersey: Cranbury; Green Village; Princeton and Somerville. New York: Auburn; Babylon, Long Island; Garrison; Ithaca; Leyden and Watkins.

Oregon: Astoria; 20 mi. E Chemult, Klamath Co.; Corvallis; Millican and Steens Mountains. Rhode Island: Johnston. South Carolina. Vermont: Newfane. Washington: Wenatchee.

Flight records: North of the 38th parallel this species is very abundant in July and again in September so that there may be two broods. South of the 38th parallel records extend throughout the winter.

Lespesia laniiferae (Webber), new combination
Achaetoneura laniiferae Webber, 1930, p. 33; Patton, 1958, p. 32.

A medium sized species, over-all length 8 to 9 mm. It is distinguished by the characters given in the key.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose, both with a pronounced yellowish cast. Second antennal segment reddish-yellow; third antennal segment black with a reddish tinge on basal one-third. Arista more or less uniformly tapered from base to apex, somewhat thickened on basal one-third. Frontal bristles about ten in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals very weak. Parafrontals with a row of bristles outside frontal row which are about one-half size of largest frontals. Facial ridges bristled about one-half distance from vibrissae to antennal bases. Frontal vitta brown, about one-third width of front.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four well defined black vittae visible from

postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black, lightly covered with gray pollen. Middle tibiae with one strong antero-dorsal bristle near middle. Hind tibiae evenly ciliate without a longer bristle.

Abdomen black in ground color, gray-pollinose with a yellowish cast. Tergum 2 without median marginal bristles; tergum 3 with one pair of weak median marginal bristles; tergum 4 with a marginal row of bristles; tergum 5 bristled on entire surface but with a row of stronger bristles near apex. Terminalia not seen by me.

Female: Similar to male.

Types: Holotype, male, labelled "Mexico, U. S. A., May 1927, ex Laniifera cyclades, Type No. 43056, U. S. National Museum." Allotype, female, same data as type. The locality label of "Mexico, U. S. A." is paradoxical and I am not clear as to what the collector meant by it. The host, Laniifera cyclades (Druce) (Pachynoa cyclades Druce, Biologia Centrali-Americana, Lepidoptera-Heterocera, 2: 220) was described from specimens from Durango City and Mexico City, Mexico. Thus it appears that the type specimens of Lespesia laniiferae originated somewhere in Mexico. Webber (1930) gave the type locality as Mexico and I am unable to pinpoint it further.

Host: Pyralidae: Laniifera cyclades (2).

Distribution: Mexico. I have found no specimens in addition to the types.

Lespesia melalophae (Allen), new combination

Figure 14.

Achaetoneura melalophae Allen, 1926, p. 195; Webber, 1930, p. 17.

A small sized species, over-all length 5 to 7 mm. The species is readily recognized by its slender shape, small size, deep golden pollen of face and front, mottled, yellowish gray pollination of the abdomen, which is in contrast to the more uniform sheen of the other species, and the narrow front (see Tables I and II).

Male: Eyes with slight pubescence visible at high magnification. Face and front golden-pollinose. Second and third antennal segments black. Arista thickened on basal one-third, tapered rapidly apically. Frontal bristles about eight in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals very weak, scarcely differentiated from adjacent hairs of occipital fringe. Parafrontals with scattered black hairs outside frontal row, none of which is equal in size to bristles of frontal row. Facial ridges bristled about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row irregular. Beard of medium thickness, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four fairly well defined black vittae visible from postero-dorsal view which vary in intensity

in different reflections. Three lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black with a reddish tinge, without pollen except for posterior surface of front femur. Pulvilli of front tarsi about as long as last two tarsal segments together. Middle tibiae with one strong antero-dorsal bristle near middle, no other bristles developed. Hind tibiae evenly ciliate with one longer bristle near middle.

Abdomen black in ground color, yellowish gray-pollinose, tergum 3 usually without a red spot laterally. Terga 2 and 3 each with one pair of median marginal bristles; tergum 4 with a marginal row of bristles; tergum 5 with an irregular row of bristles near apex. Terminalia (fig. 14) similar to those of frenchii.

Female: Third antennal segment red on basal half; pulvilli of front tarsi about as long as last tarsal segment; postabdomen not distinctive. Otherwise similar to male.

Measurements: See Tables I and II.

Types: Holotype, male, Agricultural and Mechanical College, Mississippi, Aug. 17, 1924, H. W. Allen, ex Icthyura inclusa, Type No. 40296, U. S. National Museum. Allotype, female, Agricultural and Mechanical College, Mississippi, ex Icthyura inclusa. Paratypes, one male, August 28, and one female August 29, 1921, Columbus, Ohio, H. W. Allen, ex Icthyura inclusa. One male, fall of 1923; one male, October 3, 1923; one female, March 16, 1924; one male, March 22, 1924; one male, March 24, 1924; one male,

July 25, 1924; one male and one female, August 17, 1924; two females, August 18, 1924; one male, September 17, 1924; and two females with no date, all from Agricultural and Mechanical College, Mississippi, reared from Icthyura inclusa by H. W. Allen. One male, Agricultural and Mechanical College, Mississippi, April 21, 1924, H. W. Allen, collected on foliage of peach.

Hosts: Lasiocampidae: Malacosoma disstria (20). Noctuidae: Nycteola cinereana (1). Notodontidae: Icthyura inclusa (301).

Distribution: British Columbia eastward to New Brunswick, southward to Mississippi and westward to Illinois. Alberta: Edmonton. British Columbia: Keremeos and Quesnel. New Brunswick: Green River and Victoria. Ontario: Algonquin Park; Brights Grove; Cochrane; Essex; Franz; Harkett; Patton; Sault St. Marie; Sellers; Temagami; Tranoga; and Valrita. Quebec: Magloire. Saskatchewan: Marsden. Colorado: Pagosa Springs. Connecticut: Fairfield; Putnam; Thompson and Woodstock. Illinois: Carbondale. Mississippi: Agricultural and Mechanical College. Missouri: Charleston. New Jersey: Bound Brook; Burlington; Flemington; Liberty Corners; North Branch; Ringoes; Somerville and Whitehouse. Ohio: Columbus. Pennsylvania: Exeter. Rhode Island: Westerly. Virginia: Backbay.

Flight records: North of the 38th parallel, this species appears to be most abundant in August. South of the 38th parallel, it is found throughout the year.

Lespesia parva, n. sp.

A small species, in fact, the smallest known species in the genus; over-all length about 5 mm. Distinguished from all other species of the genus by its small size and the distinct transverse bands on the abdomen.

Male: Eyes bare. Face, front, and posterior surface of head silvery-pollinose. Second and third antennal segments black. Arista thickened for nearly its entire length, abruptly pointed apically. Frontal bristles about eight in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals about one-half size of inner verticals. Parafrontals with scattered black hairs outside the frontal row, none of which is equal in size to bristles of frontal row. Facial ridges bristled for about two-thirds distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row. Beard very thin, composed of a few sparse, white hairs.

Thorax heavily gray-pollinose. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Three lateral scutellar bristles. Apical scutellar bristles strong, cruciate. Legs black and shining except for posterior surface of front femur which is gray-pollinose. Pulvilli of front tarsi shorter than last tarsal segment. Middle tibiae with one strong antero-dorsal bristle. Hind

tibiae ciliate with one longer bristle near middle, bristles quite widely spaced.

Abdomen black in ground color and heavily gray-pollinose with no yellowish cast on any segment. Second tergum black and shining; terga 3 to 5 each with a prominent black band on posterior margin. Terga 2 and 3 each with a strong pair of median marginal bristles; tergum 4 with a strong marginal row of widely spaced bristles; tergum 5 bare on proximal two-thirds followed by a transverse row of bristles, distal one-third of segment irregularly bristled. Terminalia not examined.

Female: Second and third antennal segments reddish-yellow, otherwise similar to male.

Types: Holotype, male, Rodeo, New Mexico, Aug. 22, 1938, H. J. Reinhard. Allotype, female, Bexar Co., Texas, 1931, H. B. Parks. The holotype and allotype have been deposited in the U. S. National Museum.

Hosts: Unknown.

Distribution: Texas and New Mexico.

Lespesia pholi (Webber), new combination

Figure 15.

Achaetoneura pholi Webber, 1930, p. 27.

A medium sized species, over-all length 8 to 9 mm. Easily recognized by the color of the pollen of the thorax, which has a yellowish cast visible to the naked eye.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose, the latter

with a bright yellowish cast. Second and third antennal segments black. Arista tapered nearly uniformly for its entire length. Frontal bristles eight to ten in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals very weak, scarcely differentiated from adjacent hairs of occipital fringe. Parafrontals with scattered black hairs outside frontal row none of which is equal in size to bristles of frontal row. Facial ridges bristled weakly for one-half distance from vibrissae to antennal bases, bristles sometimes in a double row. Frontal vitta brown, about one-fourth width of front. Bristles of occipital fringe in a double row, posterior row very irregular. Beard of medium thickness, composed of white hairs.

Thorax black in ground color, gray-pollinose with a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black with a reddish tinge, without pollen except for posterior surface of front femur. Pulvilli of front tarsi about as long as last two tarsal segments together. Middle tibiae with one strong antero-dorsal bristle near middle, usually no other bristles developed. Hind tibiae ciliate with one longer bristle near middle.

Abdomen black in ground color, lightly gray-pollinose, usually without red areas laterally on tergum 3. Median marginal bristles absent on tergum 2; present on

tergum 3; fourth tergum with a marginal row; fifth tergum irregularly bristled on entire surface. Terminalia distinctive (fig. 15), cerci with a pronounced concavity on posterior edge.

Female: Third antennal segment reddish on basal one-half; front more yellowish; pulvilli of front tarsi about as long as last tarsal segment; postabdomen not examined. Otherwise similar to male.

Types: Holotype, male, Springfield, Massachusetts, no date, G. Dimmock No. 2103, ex Pholus sp., Type No. 43055, U. S. National Museum. Allotype, female, same data as holotype. Paratypes, three males and ten females, same data as holotype.

Hosts: Sphingidae: Pholus satellitia pandorus (7) and Pholus sp. (15).

Distribution: In addition to the types, specimens from Antrim, Wright Co., Missouri, have been examined.

Flight records: The specimens from Antrim, Missouri, emerged in April. No dates were given for the type series.

Lespesia rileyi (Williston), new combination

Figures 16, 26.

Masicera rileyi Williston, 1889, p. 1924.

Achaetoneura rileyi, Webber, 1930, p. 32; Patton, 1958, p. 32.

A medium sized species, over-all length 6 to 8 mm. Easily distinguished from all other species except

ferruginea and testacea by the extensive reddish areas of the abdomen and from ferruginea and testacea by the absence of median marginal bristles on abdominal tergum 3.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose, usually without a yellowish cast or with at most a very faint yellowish cast. Second antennal segment reddish yellow, third antennal segment black. Arista tapered nearly uniformly from base to apex. Frontal bristles about ten in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals about one-fourth size of inner verticals. Parafrontals with scattered hairs outside frontal row, sometimes with a row of bristles which may be as large as one-half size of bristles of frontal row. Facial ridges bristled weakly for about one-third distance from vibrissae to antennal bases, bristles in a double row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row very irregular. Beard of medium thickness, composed of white hairs.

Thorax black in ground color, gray-pollinose with a yellowish cast. Mesonotum with four fairly well defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black with a reddish tinge, without pollen except for posterior surface of front femur. Pulvilli of front tarsi about as long as last tarsal segment. Middle tibiae with

one strong antero-dorsal bristle, no other bristles developed. Hind tibiae ciliate, usually without a longer bristle although there are a few exceptions.

Abdomen red in ground color, without pollen except for a narrow longitudinal band on mid-line of dorsum. Median marginal bristles absent on terga 2 and 3; fourth tergum with a marginal row; fifth tergum irregularly bristled on entire surface. Terminalia (fig. 16) distinctive, cerci broader than surstyli.

Female: Pulvilli of front tarsi shorter than last tarsal segment; postabdomen (fig. 26) distinctive, short and broad. Otherwise similar to male.

Types: Williston (1889, p. 1924) states that this species was described from "three males and four females from Dr. Riley, labeled: 153, parasitic on Heraclides cresphontes and 358, Feb. 24, '80." In the U. S. National Museum I located two males and six females, all of which bore code numbers resembling the above, so there is some discrepancy. None of the specimens bearing the code number 153 has a locality label except one female, and this is labeled Crescent City, Fla. This is here accepted as the type locality. A male labeled 153a (no locality) is here designated as lectotype.

Host: Papilionidae: Papilio cresphontes (38).

Distribution: Southern United States from Florida westward to Texas. Florida: Gainesville; Miami; Orlando and Tampa. Louisiana: Baton Rouge. Mississippi:

Gulfport. Texas: College Station; Richmond; Victoria and Willacy Co.

Flight records: The majority of the records are for October, with a lesser number for February and March.

Lespesia sabroskyi, n. sp.

Figures 18, 27.

A large species, over-all length 10 to 12 mm. Extremely close to callosamiae, from which it can be separated by the form of the male terminalia (figs. 18 and 10), the form of the female postabdomen (figs. 27 and 22), and the host, if known. So far as is known, this species parasitizes Antheraea polyphemus, Automeris io and H. euryalus, whereas L. callosamiae parasitizes only Hyalophora promethea. This species is similar in size to anisotae, from which the males may be separated by the terminalia (figs. 18 and 8). In anisotae, the cerci and surstyli are longer and more slender. The females may be separated from anisotae by the form of the postabdomen (figs. 27 and 20). Other species which are morphologically quite similar to sabroskyi such as euchaetiae, ciliata, and frenchii, may usually be separated from sabroskyi by their smaller body size.

Male: Eyes with very slight pubescence visible at high magnification. Face and front gray-pollinose, latter with a yellowish cast. Second and third antennal segments black. Arista thickened on basal one-third, tapered rapidly apically. Frontal bristles about ten in number, extending to just below base of third antennal segment. Inner

vertical bristles strong, outer verticals about one-half size of inner verticals. Parafrontals with scattered black hairs outside frontal row and a row of hairs, all of which are much smaller than bristles of frontal row. Facial ridges bristled for about one-half distance from vibrissae to antennal bases, bristles in a single row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row irregular. Beard of medium thickness, composed of white hairs.

Thorax gray-pollinose without a yellowish cast. Mesonotum with four well defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black and shining with a reddish tinge, with very little pollen except for posterior surface of front femur which is gray-pollinose. Pulvilli of front tarsi about as long as last two tarsal segments together. Middle tibiae with one strong antero-dorsal bristle; if other bristles are developed they are less than one-half size of the strong bristle. Hind tibiae evenly ciliate with one longer bristle near middle.

Abdomen black in ground color; gray-pollinose with a yellowish cast which is most pronounced on tergum 5. Tergum 3 often with red spots laterally. Terga 2 and 3 each with one pair of median marginal bristles; tergum 4 with a marginal row of bristles; tergum 5 with an irregular row of bristles at about two-thirds distance from base to apex. Terminalia (fig. 18) distinctive.

Female: Third antennal segment mostly red; pulvilli of front tarsi shorter than last tarsal segment; postabdomen (fig. 27) distinctive. Otherwise similar to male.

Measurements: See Tables I and II.

Type: Described from one female, Ottawa, Ontario, Canada, June 14 (no year), ex Antheraea polyphemus, W. Hague Harrington, in the Snow Entomological Museum, The University of Kansas. This specimen was included in the series from which Townsend (1892) described Masicera datanarum without designating a holotype. This series actually represents two species and a female from Ithaca, New York, June 19 (no year), ex Datana sp., J. H. Comstock, is designated as lectotype of datanarum (see p. 25). The remaining specimen is designated as the type of this new species.

This species is named in honor of Mr. Curtis W. Sabrosky of the United States National Museum.

Hosts: Saturniidae: Antheraea polyphemus (192), Automeris io (2), and Hyalophora euryalus (4).

Distribution: From British Columbia to Quebec, southward to Mississippi and westward to California and Oregon. British Columbia: Miles 9, 39 and 101, Big Bend Highway; Dragon Lake; Eagle Bay; Gold Stream; Green Lake; Heywood Corner; Kaslo; Mara; Mara Lake; Mission; Peachland Creek; Shuswap Lake; Trinity Valley; Vancouver and Vernon. Manitoba: Aweme. Ontario: Ignace District; Kenora District; Ottawa and Skead and Trout Lake, Algoma District. Quebec:

Hemmingford; Laniel and Mt. Royal. Saskatchewan: Indian Head and Saskatoon. California: Mill Valley, Marin Co.; Mountain View; Patterson; San Leandro, Alameda Co.; Shasta Springs; Sunnyvale, Santa Clara Co.; and West Pittsburg, Contra Costa Co. Connecticut: Manchester; New Haven and Stamford. Massachusetts: Melrose Highlands and Somerville. Michigan: Cheboygan Co. Minnesota. Mississippi: Agricultural and Mechanical College. New Hampshire: Andover. New Jersey: Hammonton; New Brunswick; Rutherford and Trenton. New York: Ithaca. Ohio: Bratenahl. Oregon: Corvallis and Eugene and vicinity. Pennsylvania: Harrisburg and Lansdowne. Texas: Austin. Vermont: Websterville. Virginia: Charlottesville.

Flight records: The records for this species are scattered throughout the year and this is probably due to the fact that many of the flies emerged from pupae which were held indoors over the winter, which apparently caused the flies to emerge earlier than they would have in nature. For example, I have many records for December, January and February in Canada. It seems highly unlikely that flies would emerge in nature at this time of year at this latitude. However, it seems most likely that this species flies at some time during the period of April through June north of the 38th parallel, since there are a number of records for these months.

Lespesia schizurae (Townsend), new combination

Figure 17.

Masicera schizurae Townsend, 1891b, p. 187.

Sturmia schizurae Coquillett, 1897, p. 113.

Argyrophylax piperi Townsend, 1908, p. 98 (new name).

Achaetoneura schizurae, Aldrich, 1929, p. 36.

Achaetoneura piperi, Webber, 1930, p. 29 (new synonymy); Patton, 1958, p. 32.

Achaetoneura schizurae, Webber, 1930, p. 28; Patton, 1958, p. 32.

Webber (1930) regarded piperi as a distinct species from schizurae Townsend. After examining many specimens from various parts of the range, I can find no basis for maintaining the name piperi, and it is here treated as a synonym of schizurae. According to Webber, piperi can be distinguished from schizurae Townsend by its larger size and more robust form; hind tibiae of male densely ciliate without a longer bristle; fourth abdominal tergum densely bristled except at extreme base, bristles at apex strongest; facial ridges strongly bristled a little over one-half distance from vibrissae to antennal bases; front pulvilli of male smoky black, nearly as long as last two tarsal segments; whereas schizurae Townsend is smaller and less robust; hind tibiae of male less densely ciliate and with one longer bristle; more sparsely bristled fourth abdominal tergum; facial ridges weakly bristled one-half distance from vibrissae to antennal bases; front pulvilli of male shorter and grayish rather than black. Additional minor

characters are mentioned. None of these characters holds up in a long series of specimens because many individuals are found which combine the characters of the two nominal species. For example, many large robust males are found which have a longer bristle on the hind tibia. Furthermore, the type of Masicera schizurae Townsend was reared from Schizura unicornis; and the type of Sturmia schizurae Coquillett (= Argyrophylax piperi Townsend) was reared from Schizura ipomoeae. This suggests biological as well as morphological similarities between the two nominal species. Therefore, piperi is best regarded as a synonym of schizurae Townsend.

A variable sized species, body length ranging from 8 to 12 mm. The larger males are usually similar in size to the males of anisotae, from which they can be distinguished by the absence of median marginal bristles on abdominal terga 2 and 3, and by the differently shaped abdomen, which is wider and more flattened than that of anisotae. The smaller males are difficult to distinguish from the males of aletiae, but they can be separated by their terminalia (see figs. 17 and 7). The females can be distinguished from all other species of the genus except pholi, cuculliae and laniiferae by median marginal bristles which are absent on abdominal tergum 2 but present on abdominal tergum 3, and from pholi, cuculliae and laniiferae by their larger size.

Male: Eyes varying from bare to slightly pubescent. Face and front gray-pollinose with a slight tinge of

golden. Second and third antennal segments black. Arista tapered nearly uniformly for its entire length, thickened slightly on basal half. Frontal bristles about ten in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals very weak. Parafrontals thickly haired outside the frontal row, none of hairs equal in size to bristles of frontal row. Facial ridges bristled for about one-half distance from vibrissae to antennal bases, bristles usually in a double row. Frontal vitta brown, about one-third width of front. Bristles of occipital fringe in a double row, posterior row very weak. Beard very thick, composed of white hairs.

Thorax lightly gray-pollinose. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate, relatively weak. Legs black and shining with a reddish tinge except for posterior surface of front femur which is gray-pollinose. Pulvilli of front tarsi about as long as last two tarsal segments together. Middle tibiae with one strong and one weak antero-dorsal bristle. Hind tibiae densely ciliate with or without a longer bristle near middle.

Abdomen black in ground color dorsally, shading to red laterally; lightly gray-pollinose without a yellowish cast. Median marginal bristles absent on tergum 2, usually absent on tergum 3; tergum 4 with a marginal row of

bristles; tergum 5 irregularly bristled at apex. Terminalia distinctive (fig. 17).

Female: Pulvilli of front tarsi shorter than last tarsal segment; outer vertical bristles well developed; strong median marginal bristles always present on abdominal tergum 3. Otherwise similar to male.

Measurements: See Tables I and II.

Types: Townsend originally described the species from four specimens, Manhattan, Riley County, Kansas, Oct., F. A. Marlatt, reared from Schizura unicornis. Of these, one male has been located at the U. S. National Museum and two males at The University of Kansas. Coquillett originally described Sturmia schizurae from two males and three females, Pullman, Washington, C. V Piper, bred from Schizura ipomoeae. Of these, one male and two females were located at the U. S. National Museum.

Townsend (1908) placed Sturmia schizurae Coquillett in Argyrophylax Brauer and Bergenstamm. The specific name was preoccupied by Argyrophylax schizurae Townsend, so he gave it a new name, piperi. According to Walton (1916, p. 192), Townsend was mistaken in referring schizurae Coquillett to Argyrophylax. Among the principle characters of the genus Argyrophylax are the absence of ocellar bristles, the narrow cheeks, and weakly ciliated facial ridges. Since schizurae Coquillett does not have these characters, it cannot be regarded as an Argyrophylax and is here treated as a Lespesia, in which genus it is also preoccupied by schizurae Townsend as noted in the synonymy.

Hosts: Notodontidae: Heterocampa biundata (11), Heterocampa sp. (2), Schizura ipomoeae (6) and S. unicornis (4).

Distribution: British Columbia westward to Ontario, southward to Florida and westward to Arizona. British Columbia: Mara Lake and Vancouver. Ontario: Bala; Bells Corners; Buckhorn and Sault St. Marie. Arizona: Indian Creek Canyon, Chiricahua Mountains and Ruby. Arkansas: Ozone and Washington Co. District of Columbia: Washington. Florida: La Belle and Larkins. Georgia. Idaho: La Waha. Illinois: Carlinville and Havana. Kansas: Coffey Co.; Lawrence and Montgomery Co. Maryland: Plummer Island. Massachusetts: Woods Hole. Michigan: Douglas Lake. Missouri: Kirkwood. New Jersey: Lancaster and Riverton. New Mexico: Koehler. New York: Baiting Hollow, Long Island; Canandaigua Lake; Huntingdon, Long Island; Ithaca; Riverhead, Long Island; Southampton, Long Island; Tuxedo; and Wading River, Long Island. Ohio: Sugar Grove. Oklahoma: Wichita National Forest. Pennsylvania: Lehigh Gap and Shamokin. Texas: College Station and Hidalgo Co. Utah: Green Canyon, Logan. Virginia: Dixie Ledge. Washington: Colfax.

Flight records: North of the 38th parallel, the majority of the records are for July, August and September. South of the 38th parallel records extend throughout the winter.

Lespesia testacea (Webber), new combination

Frontina violenta, Coquillett, 1897, p. 108 (misidentification).
Achaetoneura testacea Webber, 1930, p. 25.

A medium sized species, length 7 to 8 mm. Distinguished from all other species except rileyi and ferruginea by the predominantly bare and red abdomen; from rileyi it differs by the presence of median marginal bristles on abdominal tergum 3; and from ferruginea by the presence of four lateral scutellar bristles instead of three as in ferruginea.

This species is exceedingly close to rileyi and perhaps should be combined with it. Only about two characters can be used to separate the two species; i.e., in rileyi the hind tibiae are ciliate without a longer bristle and median marginal bristles are absent on abdominal tergum 3, whereas in testacea the hind tibiae are ciliate with a longer bristle and median marginal bristles are present on abdominal tergum 3. The male terminalia and the female postabdomen are almost exactly alike. The two characters mentioned in the preceding sentence hold in most cases but there are exceptions. Specimens are found which combine the characters of the two species. Since the two species can be separated in the majority of cases, they are here treated as distinct.

Male: Eyes with slight pubescence visible at high magnification. Face and front gray-pollinose, face with a yellowish cast. Second antennal segment black with a reddish tinge, third antennal segment black. Arista thickened

on basal one-half, tapered rapidly apically. Frontal bristles about ten in number, extending to just below base of third antennal segment. Inner vertical bristles strong, outer verticals very weak, scarcely differentiated from the adjacent hairs of occipital fringe. Parafrontals with a few scattered hairs outside the frontal row, none of which is equal in size to the bristles of frontal row. Facial ridges bristled weakly for about one-third distance from vibrissae to antennal bases. Frontal vitta brown, about one-fourth width of front. Bristles of occipital fringe in a double row, posterior row very weak and irregular. Beard of medium thickness, composed of white hairs.

Thorax gray-pollinose with a faint yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black and shining with a reddish tinge, femora very lightly gray-pollinose. Pulvilli of front tarsi about as long as last two tarsal segments together. Middle tibiae with one strong antero-dorsal bristle, no other bristles developed. Hind tibiae evenly ciliate, with one longer bristle near middle.

Abdomen red in ground color except for a longitudinal black band extending along mid-line of dorsum; without pollen except for narrow bands at anterior margins of the terga. Median marginal bristles absent on tergum 2; present on tergum 3; fourth tergum with a marginal row; fifth tergum bristled on entire surface but bristles denser on

apical half. Terminalia almost exactly like those of rileyi.

Female: Outer vertical bristles stronger, about one-half size of inner verticals; pulvilli of front tarsi shorter than last tarsal segment; postabdomen almost exactly like that of rileyi.

Types: Holotype, male, Washington, District of Columbia, October 8, 1884, ex Pholus vitis, Type No. 43054, U. S. National Museum. Allotype, female, Washington, District of Columbia, October 8, 1884, ex Lepidoptera larva. Paratype, one male, same data as holotype. According to Webber (1930, p. 26), there were two more specimens in the original type series, but these are missing.

Hosts: Noctuidae: Xerociris wilsoni (1). Sphingidae: Pholus achemon (2) and P. vitis (12).

Distribution: New York southward to North Carolina, westward to Texas. In addition to the types, specimens from the following localities have been examined. District of Columbia: Washington. Kansas: Wichita. Maryland: Plummer Island. New York: Baiting Hollow, Long Island. North Carolina: Raleigh. Texas: Brownsville.

Flight records: North of the 38th parallel, the majority of the few records available are for October.

Lespesia texana (Webber), new combination
Achaetoneura texana Webber, 1930, p. 24.

A medium sized species, over-all length 9 to 10 mm. Easily recognized by the deep golden pollen of the face,

front, and facial depression. Some other species have a golden-pollinose face and front but no other species has a golden-pollinose facial depression.

Male: Eyes with slight pubescence visible at high magnification. Face, front, and facial depression deep golden-pollinose. Second and third antennal segments black. Arista thickened on basal one-half, tapering rapidly apically. Frontal bristles about eight in number, extending to below base of third antennal segment. Inner vertical bristles strong, outer verticals about one-third size of inner verticals. Parafrontals often with a row of hairs outside frontal row which may be as large as one-third size of bristles of frontal row. Facial ridges bristled from one-third to two-thirds distance from vibrissae to antennal bases. Frontal vitta brown, about one-fourth width of front.

Thorax black in ground color, gray-pollinose with a yellowish cast. Mesonotum with four poorly defined black vittae visible from postero-dorsal view which vary in intensity in different reflections. Four lateral scutellar bristles. Apical scutellar bristles erect, cruciate. Legs black with a faint yellowish tinge, thinly gray-pollinose. Middle tibiae with one strong antero-dorsal bristle near middle, no other bristles developed. Hind tibiae evenly ciliate with one longer bristle.

Abdomen black in ground color, gray-pollinose with a yellowish cast. Terga 2 and 3 each with one pair of median marginal bristles; tergum 4 with a marginal row of

bristles; fifth tergum with an irregular row of bristles near apex. Fifth tergum bright golden-pollinose. Terminalia not seen.

Female: Third antennal segment more reddish, reddish on basal one-half. Otherwise similar to male.

Types: Holotype, male, Dilley, Texas, LI, 1924, Type No. 43052, U. S. National Museum. Allotype, female, Distrito Federal, Mexico, L. Conradi.

Hosts: Unknown.

Distribution: Mexico: Distrito Federal. Texas: Dilley.

Species not otherwise accounted for which have been referred to Lespesia (= Achaetoneura) since the work of Webber (1930)

spectabilis (Aldrich). Frontina spectabilis Aldrich, 1916, p. 21. Brooks (1945) erected a new genus, Eufrontina, for this species and I am in accord with this view.

westonia Webber. Achaetoneura westonia Webber, 1930, p. 24. This species was described from a single specimen which is in extremely poor condition. I suspect it to be an archippivora but can't be sure because of the condition of the type.

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TABLES OF MEASUREMENTS

TABLE 1

SUMMARY OF MEASUREMENTS TAKEN FROM THE MALES OF THE MOST COMMON SPECIES OF *Lespesia*

		Head Width		Frontal Width at Vertex		*Ratio		r-m to tip of R_{4+5}	
Species	N	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
aletiae	28	2.83	.220	.72	.063	.254	.0092	3.32	.310
anisotae	23	3.41	.786	1.14	.018	.335	.0146	3.66	.277
archippivora	30	2.48	.198	.97	.084	.393	.0126	----	----
callosamiae	25	3.12	.182	.99	.052	.316	.0101	3.41	.213
ciliata	25	2.93	.057	1.06	.033	.360	.0091	3.08	.076
euchaetiae	25	3.25	.119	1.11	.058	.340	.0113	3.24	.349
flavifrons	7	2.84	.296	.95	.105	.335	.0068	3.16	.271
frenchii	25	2.85	.091	.91	.030	.319	.0111	----	----
melalophae	25	2.35	.203	.67	.061	.285	.0150	2.74	.538
sabroskyi	23	3.17	.153	.98	.069	.309	.0154	3.48	.268
schizurae	35	3.43	.249	.94	.084	.274	.0187	4.25	.414

*Ratio = Frontal width at vertex/head width.

TABLE 2

SUMMARY OF MEASUREMENTS TAKEN FROM THE FEMALES OF THE MOST COMMON SPECIES OF *Lespesia*

		Head Width		Frontal Width at Vertex		*Ratio		r-m to tip of R_{4+5}	
Species	N	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
aletiae	26	2.97	.255	.84	.081	.284	.0084	3.28	.302
anisotae	32	3.56	.301	1.24	.098	.347	.0130	3.78	.330
archippivora	25	2.73	.283	1.05	.104	.408	.0112	----	----
callosamiae	11	3.13	.450	1.04	.150	.331	.0126	3.39	.436
ciliata	25	2.94	.136	1.25	.137	.376	.0149	3.13	.200
euchaetiae	25	3.34	.207	1.07	.125	.366	.0124	3.19	.182
fasciagaster	6	3.01	.156	1.20	.061	.398	.0125	2.81	.021
flavifrons	11	2.86	.218	.97	.108	.338	.0194	3.13	.226
frenchii	25	2.99	.103	1.00	.050	.380	.0137	----	----
melalophae	25	2.41	.142	.73	.062	.303	.0173	2.94	.649
sabroskyi	25	3.32	.172	1.09	.068	.328	.0118	3.53	.253
schizurae	33	3.51	.191	1.09	.100	.309	.0188	3.96	.193

*Ratio = Frontal width at vertex/head width.

F I G U R E S

Figure 1. Anterior view of head. The arrow indicates the measurement of head width.

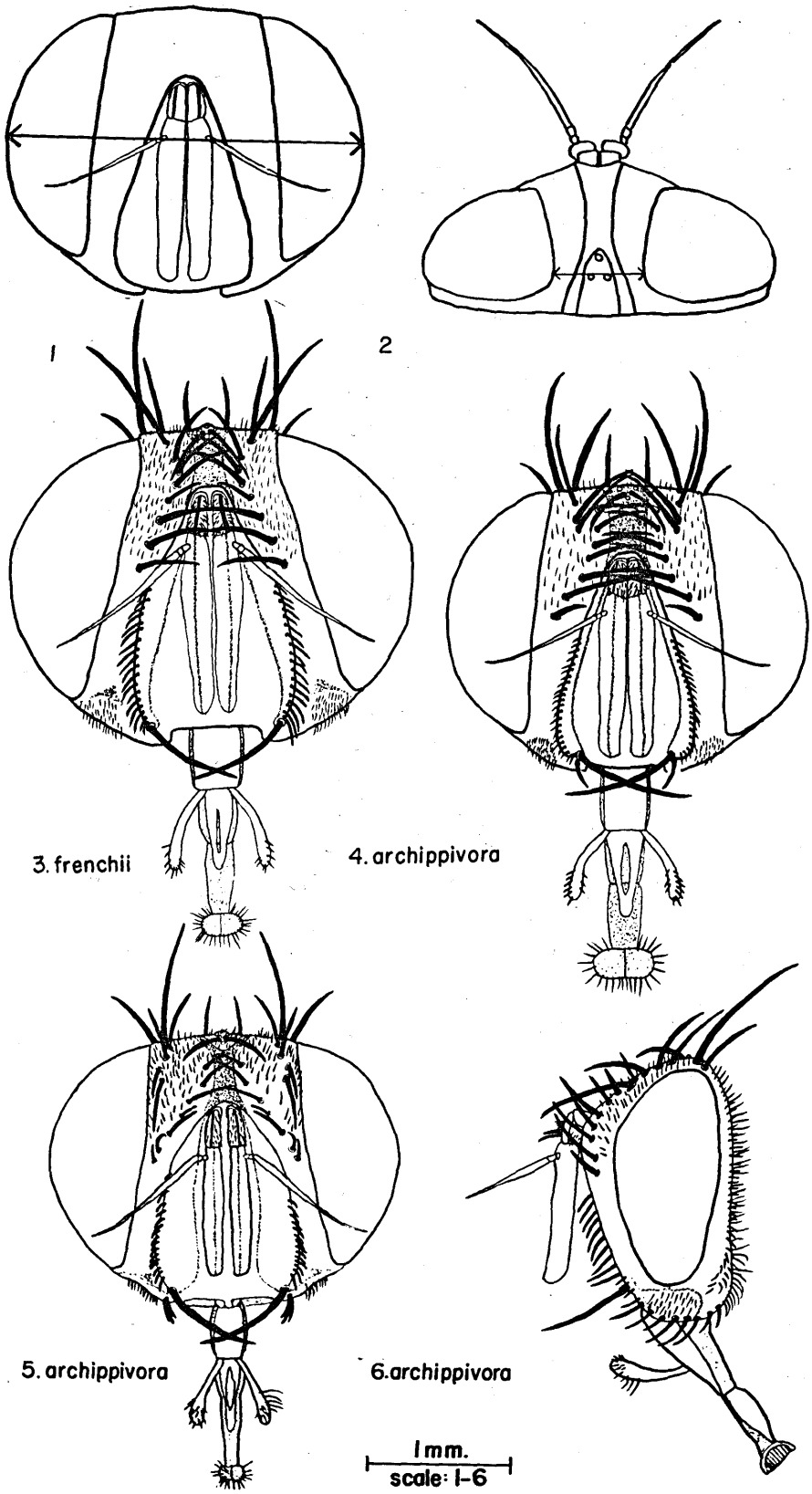
Figure 2. Dorsal view of head. The arrow indicates the measurement of frontal width at vertex.

Figure 3. Anterior view of head of male of Lespesia frenchii.

Figure 4. Anterior view of head of male of Lespesia archippivora.

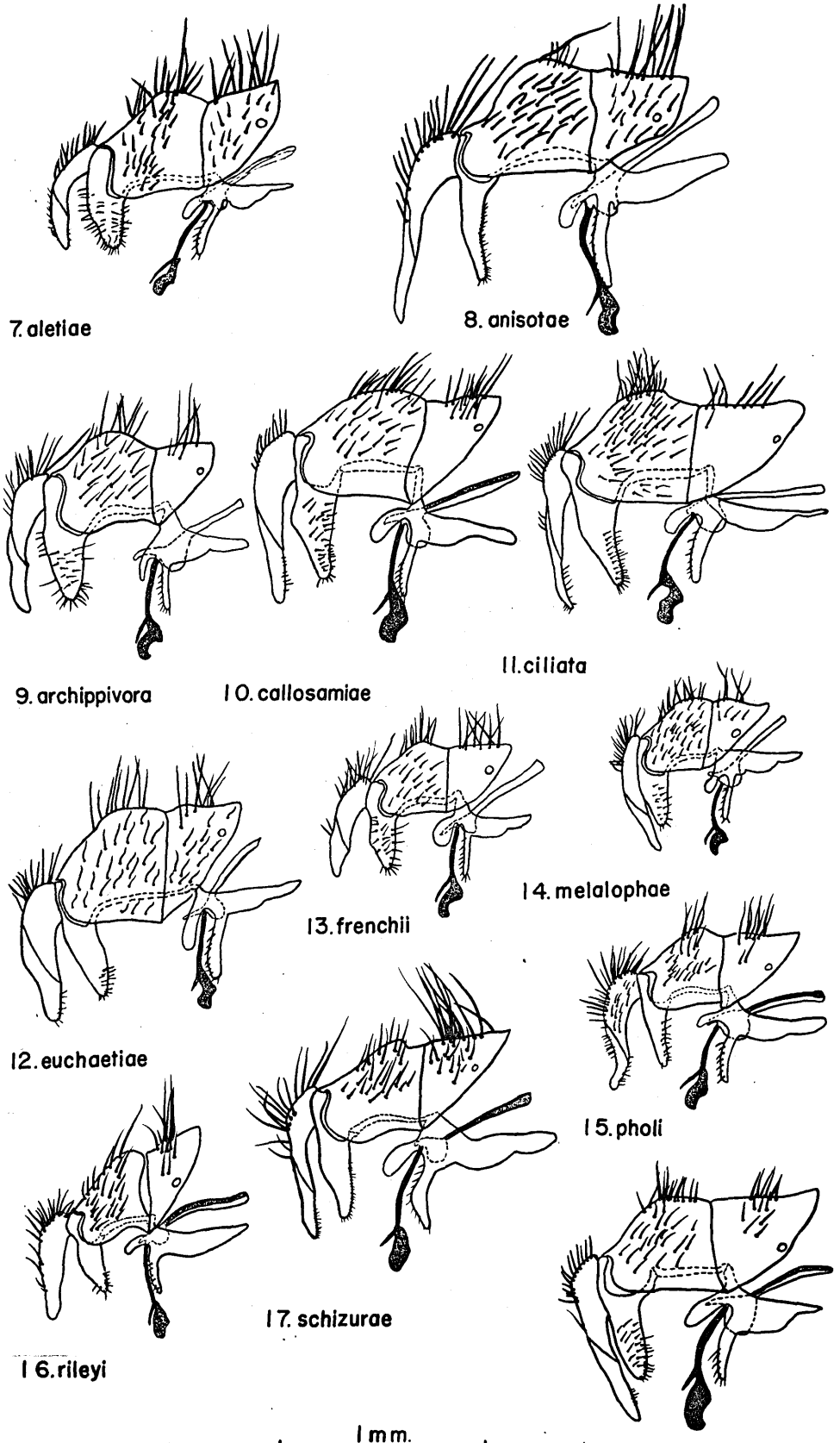
Figure 5. Anterior view of head of female of Lespesia archippivora.

Figure 6. Left lateral view of head of female of Lespesia archippivora.


1
2
3. frenchii
4. archippivora
5. archippivora
6. archippivora
1mm.
scale: 1-6

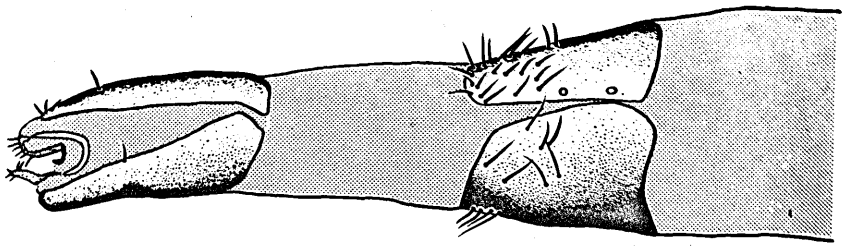
Figures 7 - 18. Right lateral views of terminalia of males of Lespesia.

7. aletiae; 8. anisotae; 9. archippivora; 10. callosamiae; 11. ciliata; 12. euchaetiae; 13. frenchii; 14. melalophae; 15. pholi; 16. rileyi; 17. schizurae; 18. sabroskyi.

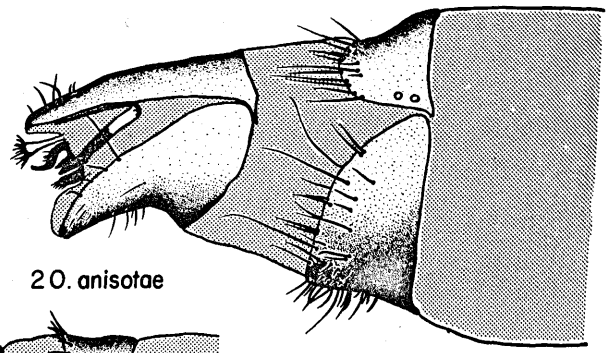

7. aletiae
8. anisotae
9. archippivora
10. callosamiae
11. ciliata
12. euchaetiae
13. frenchii
14. melalophae
15. pholi
16. rileyi
17. schizurae
18. sabroskyi
1 mm.
scale: 7-18

Figures 19 - 24. Right lateral views of postabdomens of females of Lespesia.

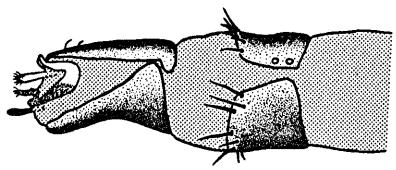
19. aletiae; 20. anisotae; 21. archippivora; 22. callosamiae; 23. ciliata; 24. cuculliae.



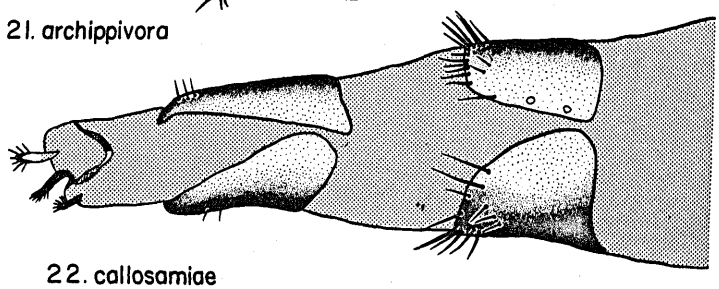
19. aletiae



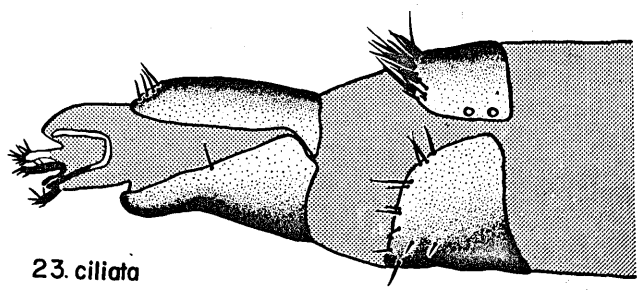
20. anisotae



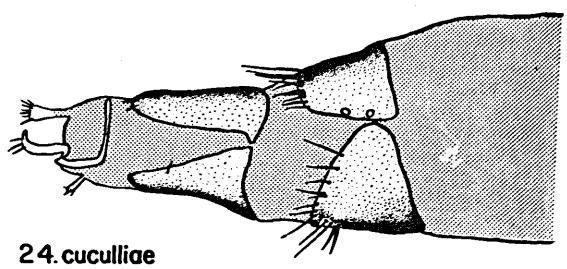
21. archippivora



22. callosamiae



23. ciliata



24. cuculliae

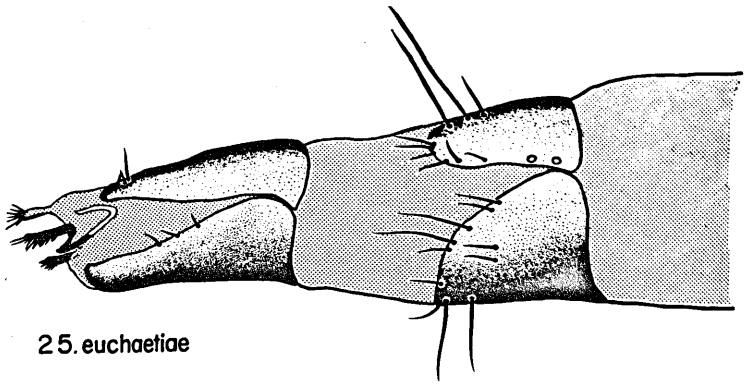
1 mm.
scale: 19-24

Figures 25 - 27. Right lateral views of postabdomens of females of Lespesia.

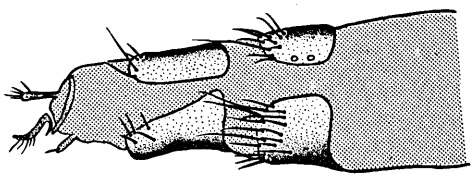
25. euchaetiae; 26. rileyi; 27. sabroskyi.

Figures 28 - 31. Dorsal views of postabdomens of females of Lespesia.

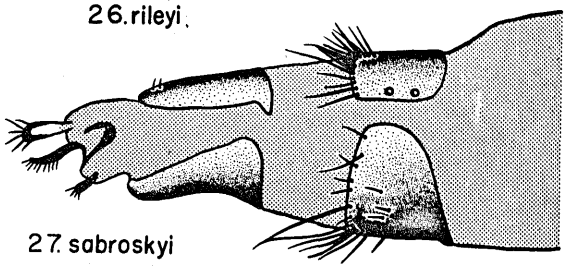
28. aletiae; 29. anisotae; 30. ciliata; 31. euchaetiae.



25. euchaetiae

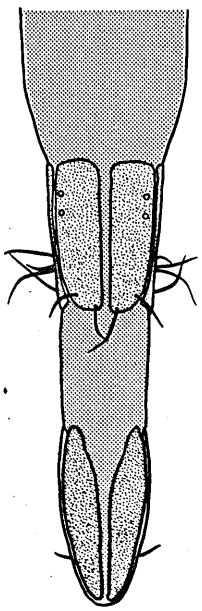


26. rileyi

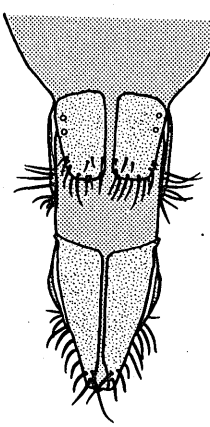


27. sabroskyi

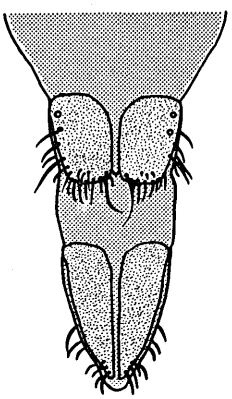
1 mm.
scale: 25-27



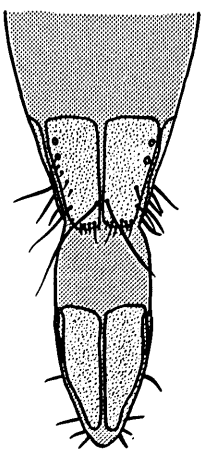
28. aletiae



29. anisotae



30. ciliata



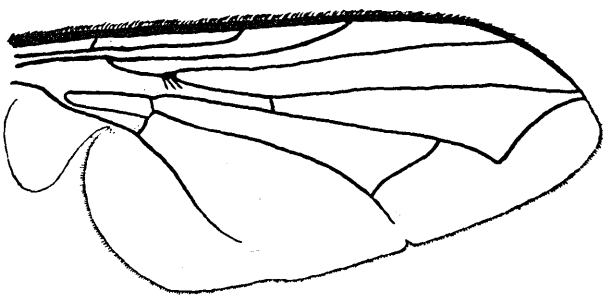
31. euchaetiae

1 mm.
scale: 28-31

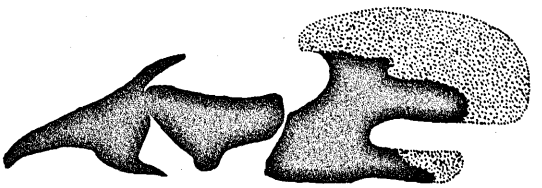
Figure 32. Right wing of male of Lespesia frenchii.

Figure 33. Left lateral view of cephalopharyngeal skeleton of third instar larva of Lespesia frenchii.

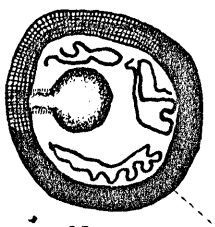
Figure 34. Puparium of Lespesia euchaetiae. 34A. Posterior view of puparium showing the posterior spiracles located above the horizontal axis; 34B. Posterior spiracles of puparium.



32 1 mm.

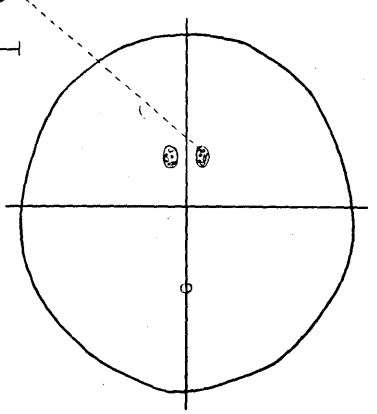


33 .25 mm.



.25 mm.

34A



2 mm.

34B